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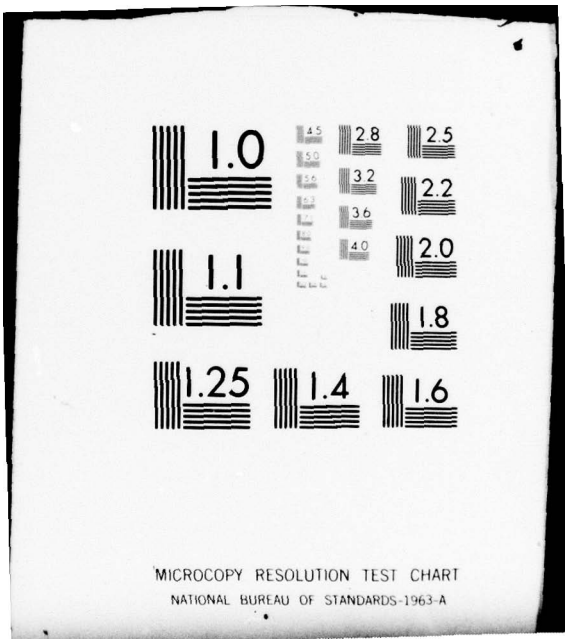
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MILITARY USE BY WARSAW TREATY ORGANIZATION FORCES OF 20TH CENTURY OPERATIONAL ROUTES IN THE BENELUX AND NORTHERN GERMANY (U)

by

Clayton A. Pratt
Lieutenant Colonel, United States Army

A Thesis
Submitted to the
Department of Geography and
The Graduate School of the University of
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University of Wyoming
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Particular thanks to my wife whose maps add to the total work and Mrs. Betty Eklund who typed the final effort.

ABSTRACT

Pratt, Clayton Arthur, Lieutenant Colonel, US Army
Military Use by Warsaw Treaty Organization Forces of 20th Century Operational Routes in the Benelux and Northern Germany (U), M.A., International Studies, April, 1977.

Routes across the plains of northern Germany and the Benelux were used in both 20th Century wars. Four operations of commanders in these wars are analyzed by the author then compared to 1977 available routes on the same terrain. It is the author's thesis that these northern routes are still viable and the probable avenue of approach for Warsaw Treaty Organization forces to attack into western Europe. ~~Chapter VI is~~ a summary is shown of current battlefield mobility capabilities of those forces plus a hypothetical Warsaw Treaty Organization force scenario of such an attack, with the author role-playing as its commander.

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CHAPTER I

THEATER OF OPERATIONS

The Scene

At 0800, 5 May 1945, Field Marshal Sir Bernard Montgomery's Twenty-First Army Group halted combat operations. For nine months his units fought through Belgium, Netherlands, Luxembourg, and Germany to link up with Soviet forces west of Berlin. Since this march, the area's geography has changed with the addition of modern networks of east-west, high-speed routes linking large new heavily populated industrial areas and the northern European ports. Today, as it was in World Wars One and Two, it is a key to successful combat operations in western Europe.

In 1944, Montgomery reasoned with his commander, General Dwight D. Eisenhower, that the best invasion route to defeat Germany was the "northern axis through Belgium to the Rhine... to these 'open plains' (that) would enable us to exploit our greatly superior mobility and strength of armored forces with greater effect than would be possible in the more difficult southern country."[1]

The physical and human geography of the Benelux countries and German plains plus poor vehicle and bridging capabilities did not permit an army group dash east. Moreover, totally

inadequate roads, soft soil conditions, the skillful placement of obstacles in built-up areas, and the destruction of river crossings by the enemy, made Blitzkrieg operations virtually impossible. Moving on the then narrow, substandard roads, the force was further delayed by the need to replace more than five-hundred destroyed bridges between the Rhine and Elbe rivers.[2] Thus, the advance that should have been characterized by "greatly superior mobility" moved no faster than the speed of an infantry foot march attack (five to ten kilometers a day) of World War One operations.

Today, it is the author's opinion that use of this same area by Warsaw Treaty Organization (WTO) forces for offensive operations would be a different story with a much quicker ending.

In 1977, the WTO commander's staff would have at least three route choices across the area. Each of these pathways is blessed with multiple paved road networks capable of supporting the heaviest vehicles, in any weather and above the reach of flood.

Full-tracked armored vehicles for such an infantry attack are now capable of crossing these water obstacles while tank chassis-mounted scissor bridges can move to a crossing site at 40 km/h, then span it with a 20-meter, heavy-load class bridge in a minute or two. Traction limitations of tracked and wheeled vehicles have been reduced to the point where fighting and support vehicles would find the trafficability

easier in floods and unstable soils. As part of the ground operations plan, the use of parachute infantry units can be supplemented by helicopter forces.

Compared to the 1944-45 maps mounted on Montgomery's caravan walls, there is today a three-fold increase in east-west red lines indicating available road systems. The most striking change noted between Montgomery's maps and the new ones is the lack of green of wooded areas and increase in black of urban.

Rapid movement of combat forces across the Benelux-northern Germany has been increased by these new roads and their hard-surface construction. Nevertheless, WTO movement would be impeded by numerous urban industrial areas astride the traditional and still viable routes. In the past century-and-a-half military thinkers from Count Helmuth von Moltke the Elder in the 1860's, have considered this area as the one presenting the least resistance to an attacker moving a massed army from West to East, or East to West. In the present author's opinion, the Soviet Army and its WTO allies still should.

Before comparing the routes and area generals of this century traversed with their armies, four things must be understood: (1) the rationale for this area's use in military operations; (2) its physical and human geography; (3) more 20th Century military history; and (4) the author's approach to selection of the WTO route.

Strategic Rationale

Why the frequent use of this area in western Europe for military operations?

The answer depends on political-military objectives as well as its geography. Whatever the ultimate strategic goal: defeat of the enemy's military force; capture of his seat of government or isolation of his industrial base, the plains were considered an excellent tactical avenue of approach.

Prior to and during each of this century's wars, the most heavily fortified static defensive positions were situated south of the plains, along routes which were the shortest distance between Berlin and Paris. The forts and lines of defense on the plains were weaker. Going either east from France or west from Germany, the end-around tactic, bypassing the major areas of static defense was less costly in men and equipment. These end-around maneuvers to avoid frontal attacks are the reason the people of the Benelux witnessed many of the critical battles of 20th Century Europe. In the author's opinion, they still have the best chance of being first-hand observers of another European conflict.

Perhaps the most important reason for using the plains avenue of approach was the time factor. Going the end-around was longer but faster. Essential in the initial offensive move of a campaign is rapid seizure of key terrain before the enemy mobilizes; there is organization of primary and secondary defense lines; or interference from neutrals or the

enemy's allies on that key terrain. Compared to the 1940 Maginot Line and 1944-45 West Wall to the south, the plains were wide-open maneuver grounds. Wide open, yes, but the catch was adequate bridging or alternate crossing methods over the rivers, streams, and canals; if they were available time could be gained by going the longer way around.

Area Geography, The Physical Geography (see map 1 at end of this chapter).

The area under study stretches 600 kilometers from the border of the Federal Republic of Germany (FRG) and German Democratic Republic (GDR) where the FRG provinces of Schleswig-Holstein and Lower Saxony join, west through the Netherlands and southwest through Belgium to the French border. On the Northern German Plain, the plain has an extreme width of 240 kilometers; it is the entire width of the Netherlands and two-thirds that of Belgium as part of the North Sea Lowlands.[3]

That portion of Belgium and Luxembourg not on the plain is found south of the Sambre-Meuse valley and includes the Ardennes and Belgian Lorraine. The elevation extremes are the below-sea-level polders of the Zuider Sea to over 600-meter summits of Cambrian-Silurian rocks in the High Ardennes.[4]

Drainage of the region is from eight major rivers and numerous lesser streams with the flow oriented north in Germany and north plus northwest in the Benelux. Starting

at the FRG-GDR border is the Elbe, to the west the Weser, Ems, and Rhine. The Lower Rhine, Waal, and Mass (it is the Meuse where it flows through Belgium) pass into the Netherlands. In Belgium are the Meuse, Sambre, and Scheldt systems (the rivers Lys, Scheldt, Dender, Senner, Dyle, and Demer). Where open to navigation, each river is heavily used by barges.

Climate

The climatic conditions of western Europe are produced by the Icelandic low-pressure and Azores high-pressure systems, each providing the area with moisture-laden clouds. During the winter months it is common for the northern plains and Ardennes to be between both air masses and influenced by both. In winter these westerly frontal passages bring significant amounts of precipitation and frequent changes in wind direction.[5]

Temperatures along the North Sea coast between Bremerhaven and Oostende range between a mean of 1°C in January to 15-17°C in July. Temperatures low enough to produce frost range from 30 days a year within 20 kilometers of the coast to 120 days in the Ardennes.[6]

Precipitation means for the coastal areas range between 600-700mm with the wettest months, July and August, and April and May, the driest. Coastal snowfall days average 30 days a year. The mean annual precipitation total in the Ardennes

is over 1200 mm, falling as snow above 300 meters for 30 days and 600 meters for 80 days.[7]

Soils found north of the Ardennes tend to be a combination of surface sand with clay subsoils. Rapid drainage through the sand is inhibited by the clay causing unstable soil conditions during wet winter months. In Germany's northern lowlands the slow drainage causes extensive areas of waterlogged bogs, especially where the soil lacks shelter from streams. Along the coast are saltwater marshes penetrating inland.[8]

Vegetation is by far the heaviest in the Ardennes: lesser wooded areas are south of Brussels and some thick hedgerows are in Flanders. A majority of the whole Benelux-Germany area is open pasture land, void of vegetation above one-meter high. The most common trees found are variations of pine or spruce maintained in small patches on non-productive farm land.[9]

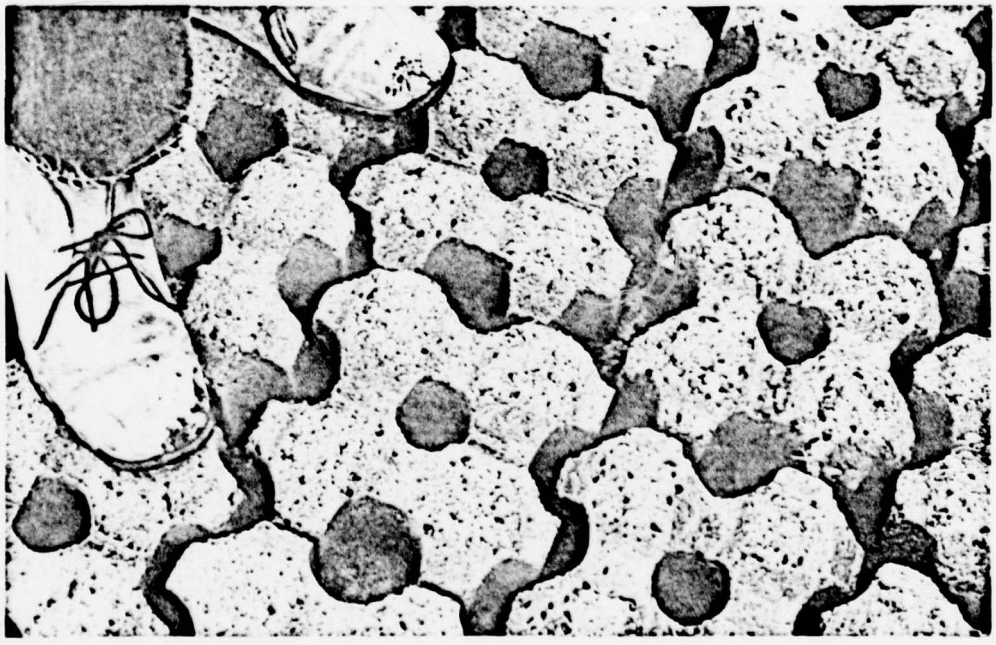
Human Geography

In northern Germany and in the Benelux countries, natural waterways are supplemented as the major transportation systems by inter-connecting canals that were relatively easily constructed in the dunes, polders, and geest north of Brunswick, Hannover, Dortmund, and south of Rotterdam. The exception is the 140-kilometer-long Albert Canal connecting Antwerp and Liege which took ten years to build due to the Herbaye Plateau west of the Meuse valley.[10]

The road network is one of the most dense and best maintained in the world. Each major industrial area and city is connected by at least one four-lane, all-weather road and in most cases by a limited-access, multi-lane divided highway. The autobahn system in Germany has historically been oriented north-south with post World War Two construction now interconnecting this system to the west with those of the Benelux. This previous orientation was to move forces laterally to the border areas.

Most secondary roads of the plains are paved with either an asphalt-treated surface or bricks. Usually a narrow two lanes wide they would provide very limited service for large scale military operations.

In Belgium and the Netherlands, north of the Ardennes are optional, parallel, first-class routes for movement on a north-south or east-west axis. Within the area south of the line Liege-Namur in Belgium and Luxembourg, routes are limited to a single multi-lane highway. Throughout the plains and Ardennes the choice of surfaced two-lane regional roads provides numerous alternatives for movement in any direction.



Mass-produced concrete paving blocks are replacing the bricks and cobbles used by Dutch road engineers on the polders and dikes of northern Holland.

The plains of northern Germany and the Benelux have an extensive railroad system that crosses international boundries at a number of locations. The railroads carry less cargo and passenger traffic than either the waterway or road system; existing lines continue to be up-graded in speed ratings while container service is also being rapidly increased.[11]

The major ports of northern continental Europe are located in this region. The German port of Kiel, on the Baltic Sea, is the only port that does not border near or on the North Sea. The other German ports are Hamburg, 120 kilometers up the Elbe; Bremen, 56 kilometers up the Weser; and Wilhelmshaven and Emden on the coast. After Rotterdam and Antwerp, Hamburg is the third port of continental Europe.[12]

Rotterdam, the world's leading port, is 30 kilometers from the sea on the Rhine and is considered the gateway to Europe.[13] The port of Antwerp is 93 kilometers up the Scheldt estuary while the port of Ghent is up from the North Sea 20 kilometers on the Wester Schelde at Terneuzen, Netherlands.

20th Century Military History

Planning for the military use of the plains for offensive operations in this century was initiated in Germany by the Schlieffen Plans of 1894-1905. German staff planners considered the rough terrain and French fortifications along Germany's western frontier would cost any German attack precious time. It was decided, therefore, to make the main effort

in the north. The plan was an outstanding example of the use of maximum concentration of combat power along the decisive northern wing of the attack with economy of force along the Franco-German frontier.[14]

Before execution in the summer of 1914, it had been decided earlier to change the plan and avoid the use of the neutral Netherlands in hopes that Britain would not fight for only Belgium, if Holland was spared.[15] This change in the plan began as early as 1908 causing the shifting of some forces south to protect the industrial Rhineland and Saar coal mines.[16] This force shift was not the primary cause of the plan's failure, it was due more to faulty execution by the Chief of the General Staff; as shown in Chapter II.

The French counter-attack plan, Plan XVII, was by contrast, an eastward thrusting attack into Germany from France. An attack by Germany through the Benelux was considered a possibility, but the French underestimated its strength, considering it would only consist of an advance west to the Meuse.[17]

Invasion in 1914 was by the traditional use of foot infantry and horse cavalry. Rates of march were limited to the capabilities and limits of the men and animals involved in the exercise. On the battlefield they quickly proved their obsolescence: heavy artillery and machine guns mowed down horses and men without mercy. Quickly the infantry took to the trenches where it remained during the next four

years of brutally stalemated conflict. Mobility, a key to offensive operations, had been lost.

Between wars there were advances in methods of movement into battle. Motorized vehicles replaced horse-drawn ones; tanks supplanted mounted cavalry, while self-propelled artillery began replacing the caisson, and infantry units began riding onto the battlefields in trucks and armored carriers. Aircraft were able to carry infantry units to parachute on targets behind the lines; first proven in tests of 1935-36 by the Soviet Army. The time required for massing, then movement of forces, was reduced more in the period between World Wars than any other.

Twenty-six years after the execution of the 1914 Moltke version of the Schlieffen Plan, the German Army once again planned and conducted offensive operations on the northern plain. Eight months prior to execution, Plan Yellow sought only to capture the Belgian and Dutch channel coast for use as air and naval bases against Britain.[18] When executed in May, 1940, it had the objective of cutting off and destroying the allied forces north and west of Sedan.

The German plan used the supposedly impassable Ardennes north of the Maginot Line as the avenue of approach to cut off French forces moving to support the Dutch Grebbe-Peel Line or the Belgian fort at Eben Emael on the Dyle Line. These French, Belgian, and Dutch lines and interconnecting forts had been built to prohibit a repetition of the

Schlieffen Plan, but they were not strongly manned. The German attack was successful with full occupation of the Benelux in less than two weeks and within six all of the allied armies in Western Europe were defeated.

The Autumn of 1944 saw the next attempt to turn the flank along the strongly fortified Franco-German border by the Allied Powers' use of the plain as the main avenue of approach into Germany. Attacking east from the Normandy beaches, the allies in the North, under the command of Montgomery, sought to exploit the use of their airborne forces to secure bridges along armored ground forces line of march. Initially, the plan failed in September, 1944, because of poor weather for airborne resupply, strong German counterattacks, and lack of sufficient mass for the attempted ground link-up across terrain or roads unable to support the tactical vehicles.

After this failure, the northern forces moved to opening the port of Antwerp, while the main effort was concentrated in the South, ultimately to be shifted back North to take advantage of the better avenue of approach into Germany provided by the terrain north of the Ruhr.

An unsuccessful German gamble to counterattack in the winter of 1944-45 through the Luxembourg-Belgium routes to recapture Antwerp and destroy the allied forces in the Benelux delayed the attack by Montgomery's forces. The deliberate crossing of the Rhine was not successful in Montgomery's zone

of action until late March, 1945. With the Northern German Plain finally open, it still took two months to cross the area and link-up with Soviet forces; due more to delays caused by terrain, weather, and traffic jams than to enemy opposition.[19]

Area Analysis Procedure - Area Division

For clarification and reference to areas on the plains, the author has placed the multiple east-west routes used by the armies of this century into one of two Zones of Action.

Zone of Action North (ZOANorth) is that area of the Benelux-northern Germany north of a line Mons-Endhoven-Enschede-Lingen-Celle from the Belgium-France border on the west, east to the PRG-GDR border, north to the Baltic Sea, FRG-Denmark border and the North Sea.

Zone of Action South (ZOASouth) is south of that line on the Belgium-France border to an east-west line of the cities of Luxembourg-Bonn-Paderborn-Salzgitter, north along the FRG-GDR border to the boundary of ZOANorth.

Within each zone are important western European population and industrial areas. Located in ZOANorth are Brussels, Antwerp, Rotterdam, Amsterdam, Bremen-Bremerhaven, Lubeck, and Kiel. ZOASouth includes the capitals of Luxembourg and Bonn, and the conglomerate city of Dusseldorf-Essen-Dormund making up the Ruhr, plus Hannover. Ground movement between all of these cities is via first-rate rail and highway systems.

In both ZOANorth and ZOASouth invasions were conducted in the 1914, 1940, and 1944-45 wars. Each of these ZOAs had several routes used as primary axes of advance. The major road network within each area was found by former 20th Century commanders to be the fastest way to get from Point A to B. Consequently, the major work of this thesis is a historical comparison of the highway systems' roads and bridges to what would be used today.

Designated ZOA History

ZOANorth was used in 1940 by General Georg von Kuechler's 18th Army to seize the Netherlands, again in 1944-45 it was used by Montgomery's 21st Army Group to secure his assigned portion of Belgium, the Netherlands, and Germany.

ZOASouth was used by the Second, Third, and Fourth German Armies attacking west in 1914 to outflank the strong defenses of Verdun, Liege, and Namur; in 1940 by General Gerd von Rundstedt's Army Group A to bypass strong defenses in France and Belgium; and in 1944-45 by General Omar N. Bradley's 12th Army Group to avoid strong German static defense positions. The German use of ZOASouth was the main effort in both 1914 and 1940. In the winter of 1944-45 the use of ZOASouth was the last significant offensive action of the German Army in World War Two.

The most heavily contested area has been the Belgian portion of ZOASouth. Each advancing army fighting through

Belgium has fought pivotal battles in the vicinity of Mons, Namur, and Liege. Key terrain for the German advance in 1914 was Liege which funneled the northern armies marching towards Paris. In May, 1940, a critical battle was the successful German airborne-glider infantry assault of the key terrain of Fort Eben Emael on the Albert Canal north of Liege. The battle from Liege to Aachen was critical to the success of allied armies in 1944-45.

Viewpoint - Historical Relationship

It is the viewpoint of this thesis that the plains in both zones of action were the best available routes for quick victory and that current operations by Warsaw Treaty Organization forces would also be conducted on them. To better understand the rationale behind the Warsaw Treaty Organization (WTO) force selections, the World War One and Two routes will be compared in Chapter II through V with what is available now. One World War One and three World War Two commanders, two each in the designated zones of action, have been selected to compare what they found in their time with 1977 terrain.

The four past commanders and their operational time frames and areas are: General Alexander von Kluck, Commander, First Army, German Army, August 1914, attacking north of Liege west to Brussels and south across the Belgian-French border to a position east of Paris (ZOASouth); General Fedor von Bock, Commander, Army Group B, German Army, May 1940, attacking

from Germany into Belgium and the Netherlands west to the North Sea (ZOANorth); General Omar N. Bradley, Commander, 12th Army Group, United States Army, September 1944-May 1945, in Belgium south of Brussels attacking east through Luxembourg into Germany south of Munster and Hannover to the Elbe (ZOASouth); and Field Marshal Sir Bernard L. Montgomery, Commander, 21st Army Group, September 1944-May 1945, in Belgium, Netherlands, and Germany attacking east to the Elbe (ZOANorth).

Viewpoint - Conventional or Nuclear Attack?

There is little question that WTO forces have the weapons to conduct tactical or strategic nuclear warfare. From the 1950s through the early 1970s, American and NATO military planners expected the European battlefield to be inundated by tactical nuclear strikes initiated by Soviet backed WTO forces; these strikes to assist them in their breakthrough and exploitation phases.

However, now US and NATO leaders, as former US Secretary of Defense Mr. Donald H. Rumsfeld, are using the phraseology of "a relatively prolonged conventional campaign" on the dual capability of Soviet warfighting; i.e., nuclear war and or conventional.[20]

Since 1973-74 Soviet published military journals (Military Herald, Soviet Military Review, etc.) have begun a resurgence of conventional warfare articles, especially the successful

deep penetration battle techniques of 1943-45 against Germany. When dealing with the conventional-nuclear war question, these articles stress a conventional mode in the initial phase of operations, to be sustained for some considerable period before nuclear weapons need to be used. These military authored articles are reflecting the similar Soviet-run training maneuver scenarios held in eastern Europe; the first use of nuclear weapons on the tactical battlefield is normally the NATO force.

Presentation of Author's Role Playing

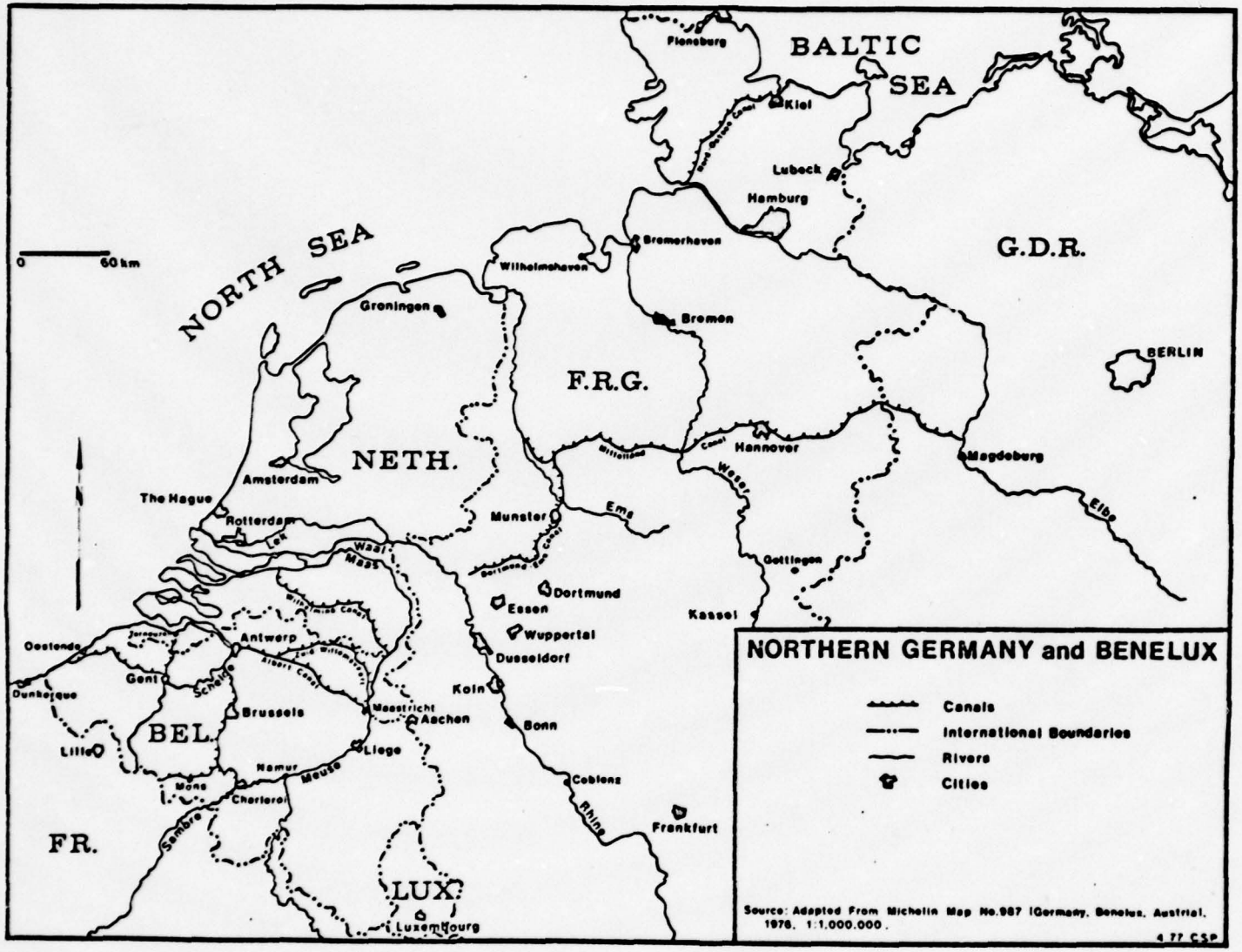
Chapter VI of this study presents the author's proposition of the current and likely avenues of approach, routes, critical terrain, and objectives for a Warsaw Treaty Organization attack west across the plains. The attack by these forces would be, in the author's thesis a conventional operation without the use of nuclear weapons; these heavy destruction weapons would be unnecessary and detrimental to the WTO doctrine concept of offensive operations with overwhelming forces massed at weakly defended areas, then rapid penetration and exploitation.

In Chapter VI, the author in this scenario will act the role of the Warsaw Treaty Organization commander to lead the reader through the operation from H-Hour on D-Day to operation termination.

Since the last military engagements of Montgomery's forces on the Luneburg Heath near the Elbe, the armies of all

modern nations have made significant improvements in the rapid movement of military forces. This, combined with the improved highway systems of the last thirty years leads to the conclusion that successful Blitzkrieg-style operations are well within the realm of possibility along the formerly used routes of this century.

The author did field work in January and February 1977 on the battlefields of Generals Kluck, Bock, Bradley, and Montgomery. Initial research in military archives of London and Brussels provided a wealth of hints as to key terrain for previous battles; these locations were then analyzed for their offensive application today.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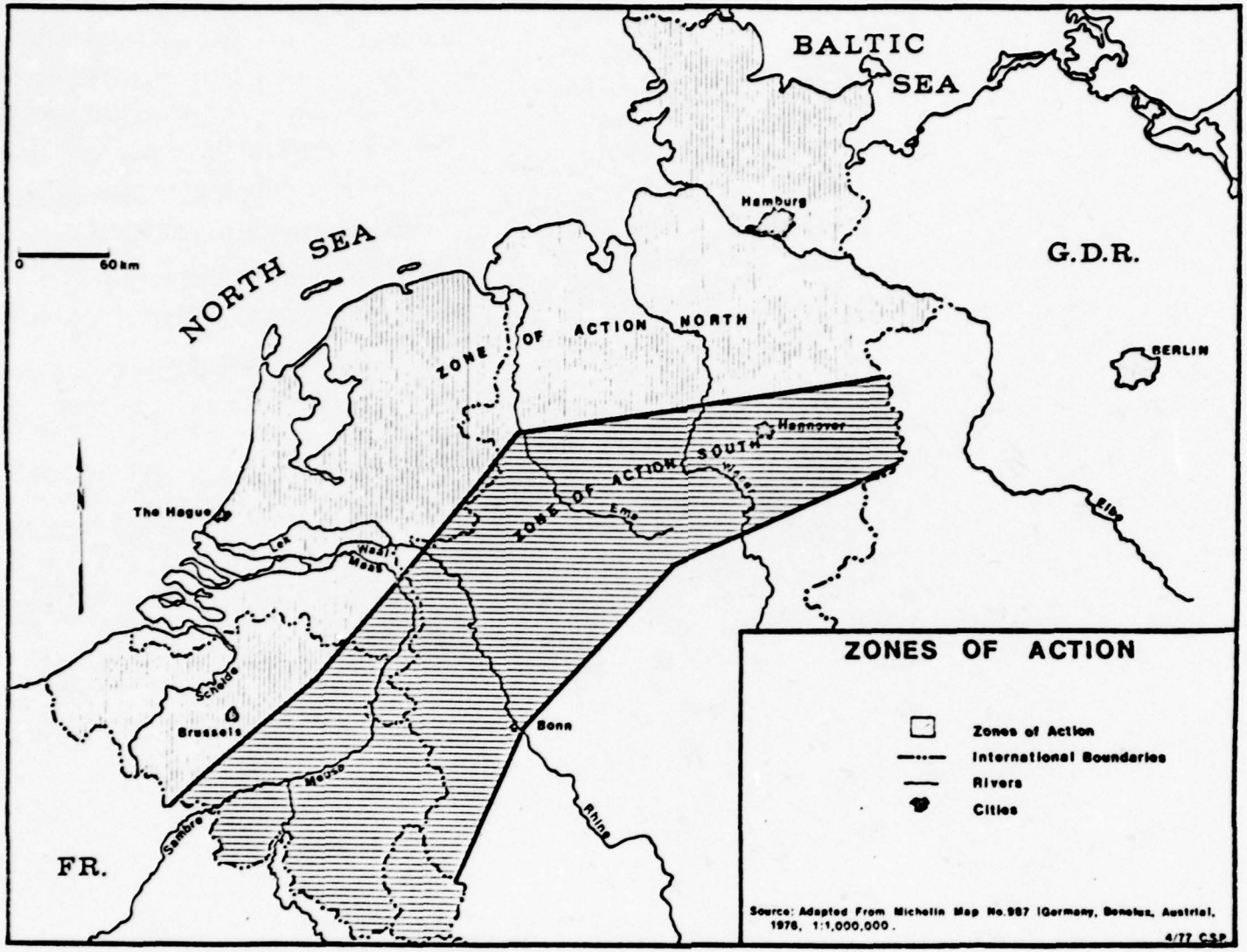
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CHAPTER II

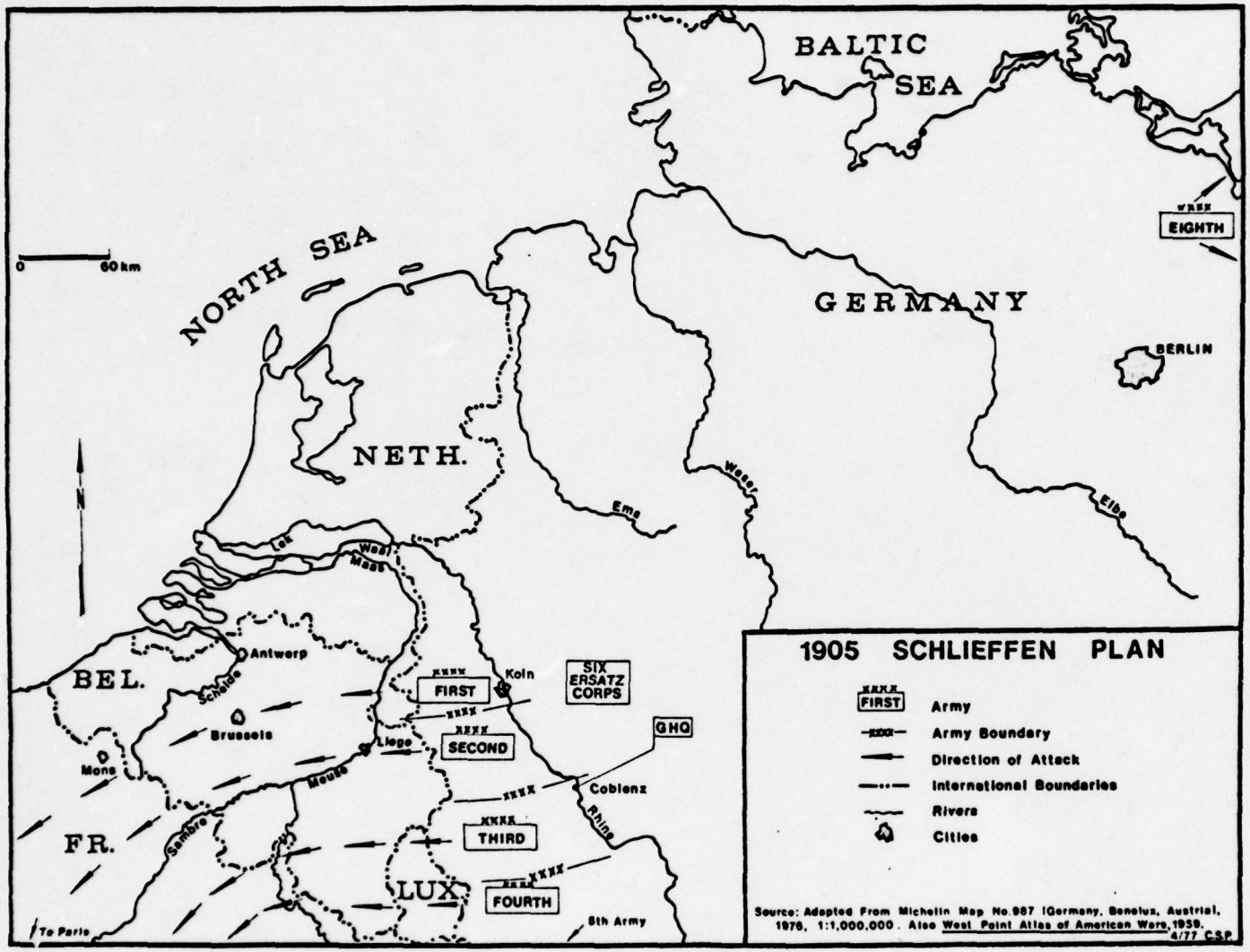
GENERAL ALEXANDER von KLUCK

AUGUST 1914

Background

Operation orders of the August, 1914 German attack into France were based on general war plans prepared by Count Alfred von Schlieffen.[21] Chief of the German General Staff at the turn of the century, he was responsible for the military planning to defeat the armies of France and Russia. Built around good intelligence information, plus sound reasoning, his plan provided a simple, effective scheme of maneuver.

The French Army was the first to be defeated by an attack around its northern flank on selected routes through the low countries. This attack would avoid the massed French armies in the south and the rugged border area terrain, providing the speediest route for German forces to Paris. With the successful execution of this flanking movement, German forces could then destroy the French by an attack into their rear defenses. Once the French Army was destroyed, German units would be moved east by rail to carry the war to Russia; ending external threats plus insuring the internal stability of the industrial military-dominated German Empire.[22]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Source: Adapted From Michelin Map No.987 (Germany, Benelux, Austria), 1976, 1:1,000,000. Also West Point Atlas of American Wars, 1959.
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During the years from its inception to its final execution, the Schlieffen Plan changed in form and emphasis. The attack west to defeat France was modified by reducing in strength the critical right wing army, the flanking force. Schlieffen suggested some changes, though it was his successor who ordered the most severe cuts. The new Chief of the General Staff, General Helmuth von Moltke decided to alter the ratio of right wing to left wing forces from 7:1 to 3:1 plus keep a heavy reserve force in Germany to protect the Ruhr.[23] His decision to avoid Dutch territory brought the right flank army to within artillery range of the Liege defenses, restricted the lateral dispersion of the right flank force, thus slowing its advance across the Meuse by days.

The revised plan of 1914 still called for a five-army attack west, conduct of a left wheel movement, and use of the Belgian plain north of the Meuse. In a wheel movement the inside flank moves slowly while the outside flank rapidly, it dictating the effective speed of the whole maneuver. Selected by Moltke to command the flank army, the First Army, was the dynamic General Alexander von Kluck.

Order of Battle

A career soldier for 49 years, General von Kluck had served as a second lieutenant and was wounded in action in the Franco-Prussian War. He was proud that during his career he had primarily been a commander of soldiers with little time as a staff officer.[24]

When shown the orders for his part in the upcoming operation, Kluck was particularly displeased with the limited reserve force allocated to the First Army; the reserve had been pulled from him to guard the Ruhr.[25] With this reduction he had remaining four attacking corps, two reserve corps, and three Landwehr brigades.[26] On D-Day the total strength of his force was 142 infantry battalions, 32 cavalry squadrons, 110 artillery batteries, and 21 engineer companies.[27]

Transportation

The primary military transportation in Germany was by an excellent railroad system. During the two-week mobilization period, a majority of First Army units were moved by this rail system near to assembly areas in western Germany.[28] From the western rail terminals to bivouac sites, infantry units foot-marched, light motor vehicles and horse-drawn wagons carried logistical support, while cavalry and horse-drawn artillery units provided their own transport.

In combat operations maneuver was conducted by foot infantry marches or mounted cavalry attacks. For the first time in a European war, light aircraft were used for observation and adjustment or artillery fire.

First Army Concept of Operations

From the German-Belgian border at Aachen to Liege on the Meuse, the Second Army (General Karl von Bulow) was responsible for clearing the way of Belgian forces.[29] After

Bulow's Second Army had neutralized the Belgian forts surrounding Liege, the First Army would move north of them, cross the river to begin the march west on Brussels. Completing the 65-kilometer march from the river, it would secure Brussels, then head southwest as the flank guard for the other armies. When across the Belgium-French border, it would participate in the attack to destroy the French Army, then move back through Germany to engage Russian forces on the eastern front.[30]

Road Classification in Belgium

In 1914, main roads were classified as state and provincial routes. State roads were paved or macadamized to a width of 3 to 5 meters, usually bordered by shade trees; provincial roads were normally paved, but narrower than the state system. Eighty percent of the main roads in Belgium were the better state roads. The regular distribution of cities, towns, and villages was the cause for the network of main, local, and secondary roads to be even throughout the First Army area.[31]

Main road bridges were generally able to support military vehicles, local and secondary road bridges were unsatisfactory. Three bridges over the Meuse north of Liege were under direct observation and artillery fire from Belgian fortifications.[32]

Routes and Scheme of Maneuver

For the approach march to the German border the First Army's assigned corridor was 2,000 meters wide. This narrow defile had three main streets in Aachen to support the movement of Kluck's 200,000 soldiers plus equipment. For two days the army's three columns stretched 50 to 75 kilometers, covering the 20 kilometers from the Meuse, through Aachen, back to assembly areas in Germany.[33]

The potential traffic jams did not materialize, the First Army march to the Meuse went smoothly. At the river, crossing on civilian bridges was denied by demolition during the Belgian Army defense of Liege and withdrawal northwest. Replacement bridging was constructed by German engineers at Lixhe, a few hundred meters from the Dutch border.[34]

Across the Meuse, German forces were less restricted, able to spread out, use main roads and bridges, and deploy the cavalry screening force. Engineer units were held close behind infantry and reconnaissance units to repair roads blocked by combat action. First Army used the two state roads west-northwest from Liege to Brussels, marching the 65 kilometers in five days.[35]

With Brussels abandoned by enemy forces, First Army found capture an easy victory. The very high rate of march during the past five days was forced to slow after Brussels. Extreme summer heat caused considerable soldier and horse fatigue, enemy counter action became stronger as the army

moved southwest towards France, and the predominantly secondary and rural road system now made up the available routes.

In all of the First Army's operations in Belgium, the two major obstacles to rapid movement, water and built-up areas, had been negotiated quickly or if possible by-passed. General von Kluck anticipated the requirement for military bridging across the Meuse, it was ready and professionally erected; after the Meuse, water obstacles were parallel to the line of march or uncontested.

Belgian forces defended a few towns on the two main roads to Brussels causing some minor delay in the advance. Rear area guerrilla action required garrison forces, eroding combat strength during later operations in France.[36]

Route Selection in 1977

The objective of the maneuver in 1977 would remain as it was six decades ago; avoid Holland, move to and occupy Brussels, protect the right flank of a turning movement through Belgium into France.

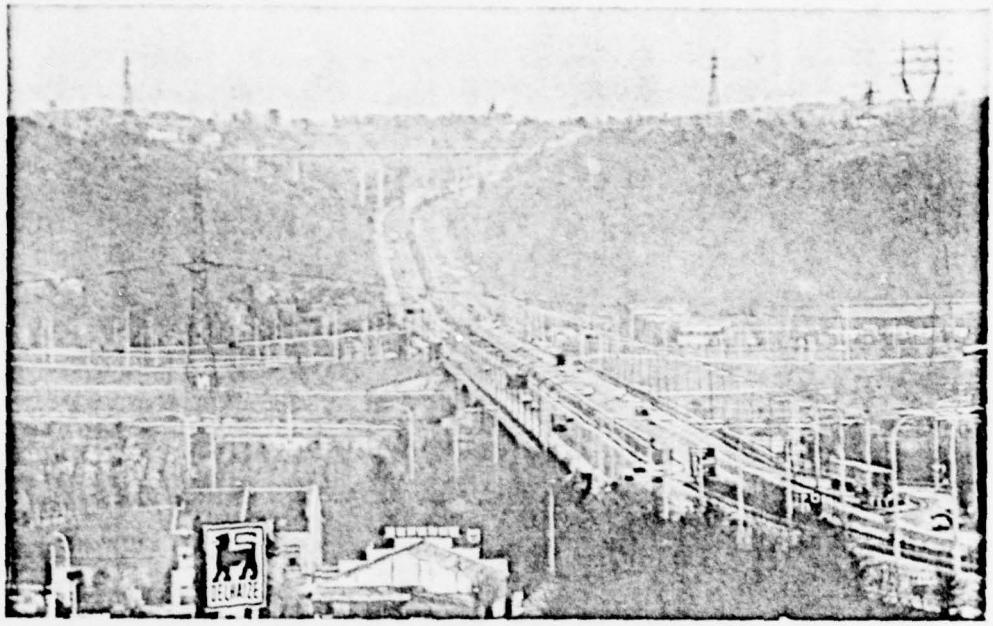
In the First Army area new (since the end of World War Two) high-speed routes of approach are available to the Meuse, west to Brussels, then southwest to France. After the 1914-18 war, all roads were repaired while additional roads were built to expedite ground vehicle travel.[37] The roads used by General von Kluck are now at least double-wide (6-10 meters), some 12-15 meters when counting sidewalks, tramways,

and bicycle paths.[38] Main, rural, and secondary roads continue to be tree-lined and are now all paved. The post World War Two Belgian national highway system, autostrade, is the predominant change in route characteristics. These European standard four-lane divided, limited-access highways allow high-speed movement on 200 kilometers of autostrade between Aachen-Liege, Liege-Brussels, and Brussels-Mons.

In 1977, the First Army march through Aachen would be conducted on wider, straighter streets; allowing more compact and shorter columns. To control traffic and avoid possible confusion on Aachen's routes, the 1977 commander could assign a general officer to monitor and control traffic. It worked well for Kluck in 1914.[39]

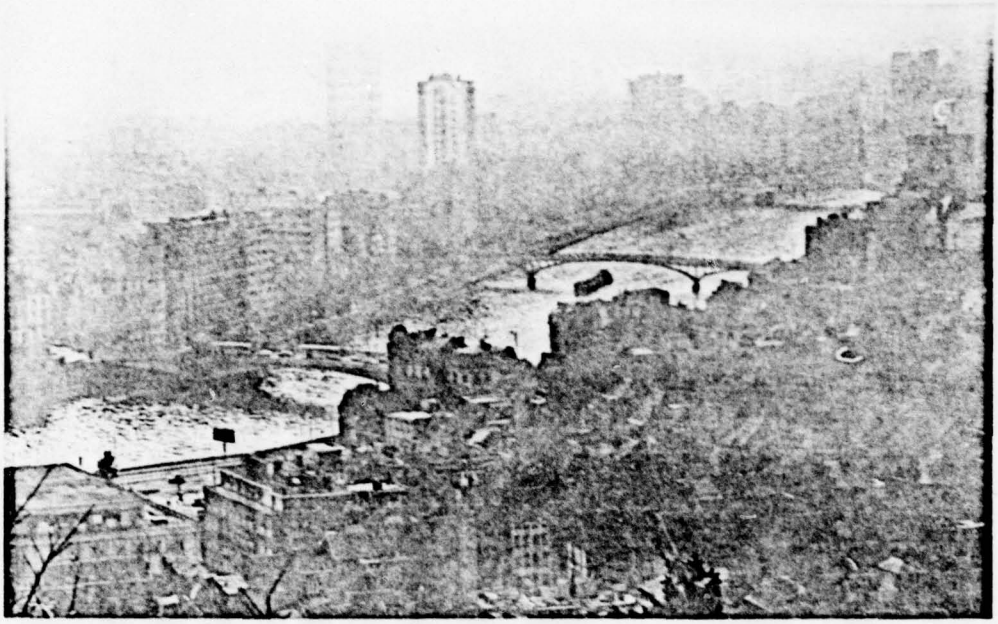
Deep in Germany begins autobahn E5 connecting Germany at Aachen with Liege, Brussels, on to Oostende at the North Sea. E5 is the ideal principle route to the Meuse, then to Brussels. Additionally, main state road N3, used in 1914, parallels E5 west of the Meuse, providing an optional route to the more direct and wider autostrade.

The Meuse is now a double barrier with the 1939 construction of the Albert Canal. To cross the Meuse-Albert there are currently five bridge sites. The largest is the bridge for E5, four lanes, spanning both the Meuse and Albert Canal at Herstal.



The E5 bridge at Herstal crosses the Meuse-Albert north of Liege. Looking east from the left bank highground, during a "clear" winter afternoon, the north-south autostrade E9 can be dimly seen along the far bank ridgeline. Numerous obstacles would make mass parachute operations difficult; helicopters could find a few suitable landing zones.

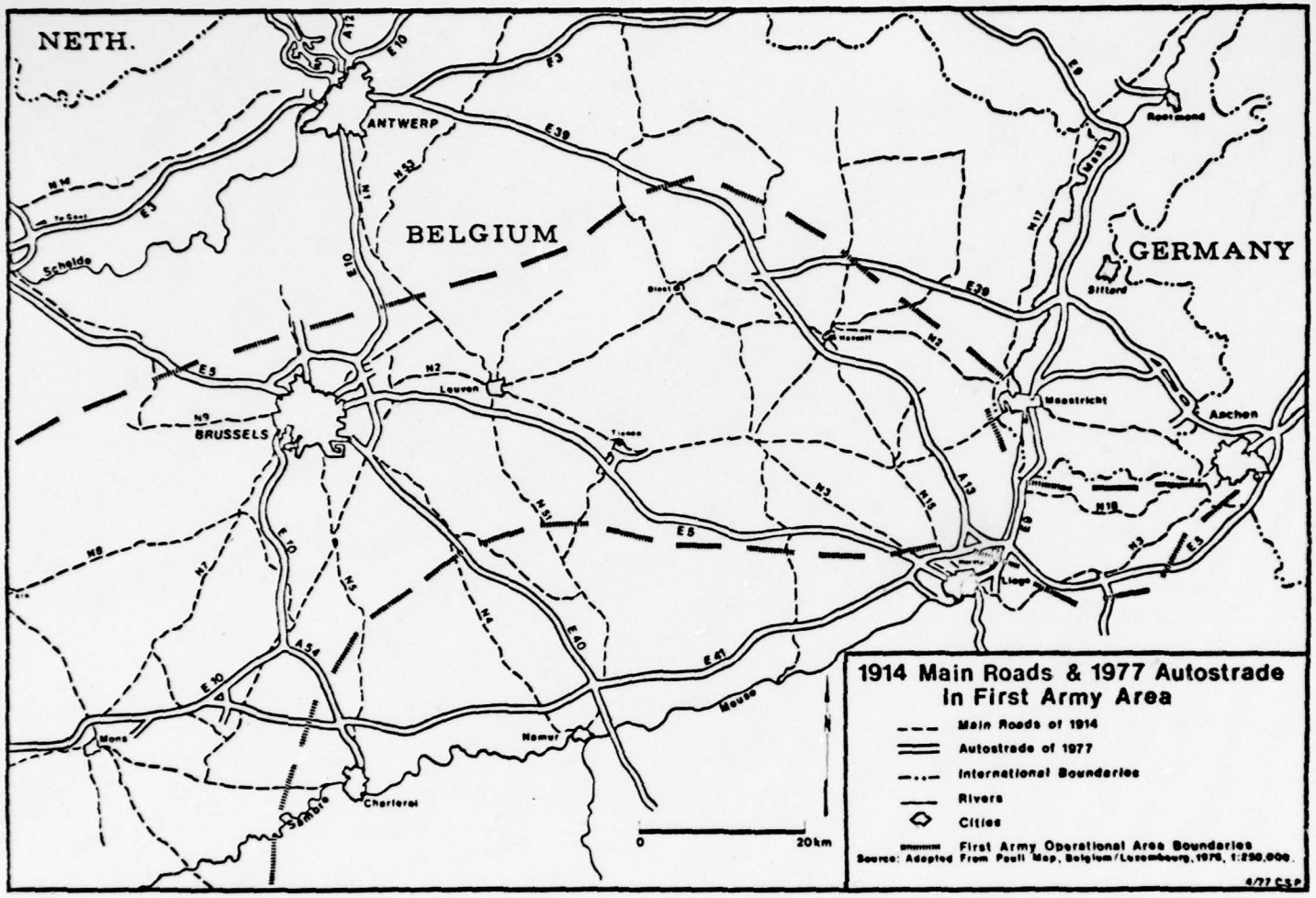
The advantage of this modern road system is the direct path to major cities while avoiding the delay of lesser towns and villages.



The highrise buildings on the right bank of the Meuse are new but the built-up area surrounding the Liege bridges have been an obstacle to commanders during this century. Direct observation and fire capabilities are indicated in this photo taken from the Citadel; crossing these bridges under fire would have been a costly and time-consuming problem for the soldiers of General von Kluck's First Army.

By-pass roads around Brussels connect with two major north-south autostrade, E10 and N7; south of Brussels N7 divides giving a second choice for autostrade movement to the French border.

In all but a few instances the total road system north and west of the Meuse will handle high density military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1914 Main Roads & 1977 Autostrade
in First Army Area
Main Roads of 1914
Autostrade of 1977
International Boundaries
Rivers
Cities
First Army Operational Area Boundaries
Source: Adapted From Pouli Map, Belgium/Luxembourg, 1970, 1:250,000.
4/77 CSP

traffic, a road system ideal for General von Kluck's scheme of maneuver.

Summary

The five German armies failed to win the battle for France. Without the strength to continue an effective struggle on two fronts, it lost the external conflict and internal national control. Was it General von Kluck's fault, did he fail to move his forces fast enough as required in the Schlieffen Plan?

No, it was the lack of command at the top that caused the delays, allowing the French to stop the advance in the west.

If General von Moltke had allowed the First Army to use Dutch territory, there would have been less delay in moving on Brussels. Liege could have been neutralized, by-passed, or forgotten as its domination of crossing sites would no longer be a factor. The First Army would have begun its advance days before it finally did.

Once into Belgium, Moltke decided to subordinate General von Kluck's army to the Second Army under Bulow to coordinate the actions of the First and Second Armies. Bulow lacked personal drive and professionalism, causing movement delays, handicapping the aggressiveness of Kluck, and misdirecting attacks at main elements of the French Army. This subordination of the First Army to Bulow slowed down

the critical right flank army, giving the French time to prepare.

Moltke's next major blunder was keeping his headquarters in Coblenz, 100 kilometers from the fighting, relying on sabotage-prone telephone-telegraph communications to direct the battle. The inability to keep abreast of the current situation caused delays in the transmission of logical orders and receipt of timely battle reports.

These actions of the Chief of the General Staff in the execution of the Schlieffen Plan were the cause of its failure. The soldiers and commander of the First Army were strong, while it was the ineffectiveness of Moltke that influenced the shape of Europe.

CHAPTER III

GENERAL FEDOR von BOCK

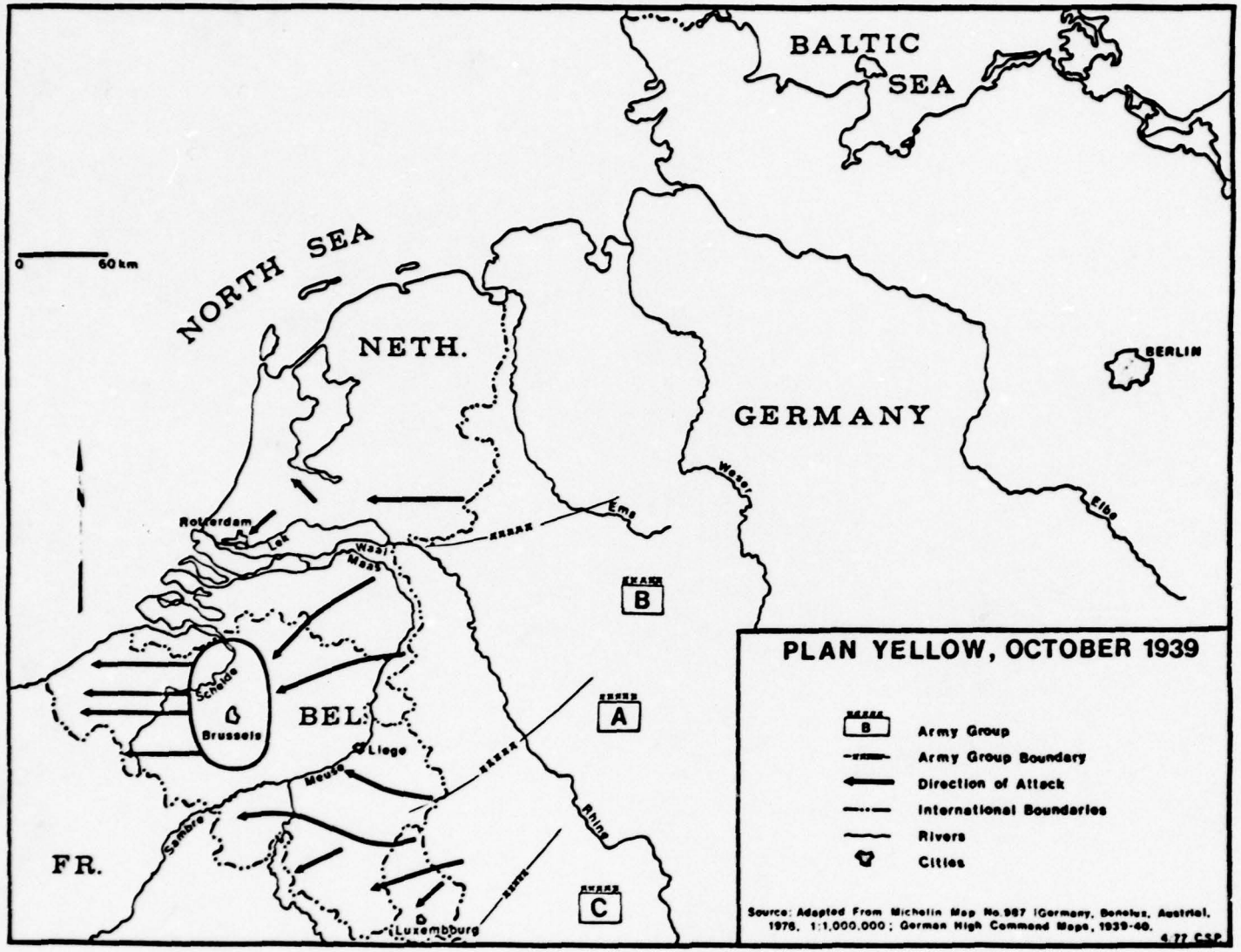
May 1940

Background

In 1940, Germany faced a military situation similar to that of 1914; large enemy forces were positioned east and west of Germany, to defeat both simultaneously would not be possible. A 1938 treaty with Russia was keeping that army out of Germany. An invasion and occupation of the low countries and France would insure those nation's armies were eliminated as a threat.

The element of surprise was going to be difficult to achieve in the Spring of 1940 as France and Great Britain had been at war with Germany since September, 1939. After the German victory in Poland, the next obvious move was an attempt to defeat France.

French intelligence reasoned an attack would come directly for Paris from the areas around Metz or, secondly, be a revision of the Schlieffen Plan with another maneuver around the northern flank. The concrete bunkers and fortifications of the Maginot Line and rough terrain on the border with Germany ruled out the straight-on attack as being too time-consuming and costly for Germany. The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PLAN YELLOW, OCTOBER 1939
B Army Group
Army Group Boundary
Direction of Attack
International Boundaries
Rivers
Cities
Source: Adapted From Michelin Map No.987 (Germany, Benelux, Austria), 1976, 1:1,000,000; German High Command Maps, 1939-40.
4 77 CSP

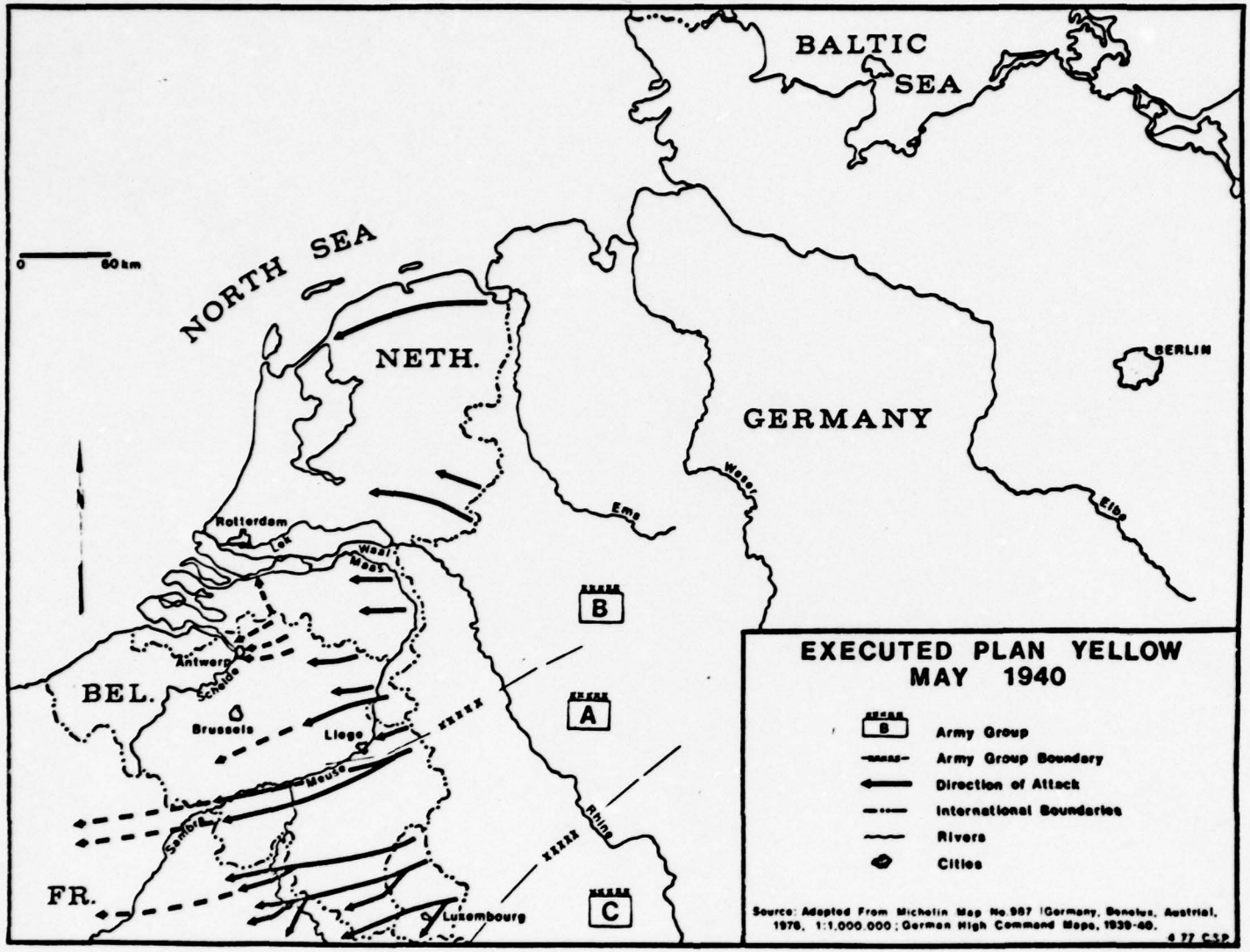
probable approach then was from north of the Ardennes on the plains of the Benelux, then south to Paris.

The French counter-plan was a limited force holding action along the Maginot Line, move the majority of its army into Belgium and Holland, then attack the main German thrust on its flank. After its destruction, the French Army was to march on the Ruhr to occupy the industrial might of the Third Reich.[40]

French assumptions of German intentions were accurate until October, 1939; until then Germany's Plan Yellow had indeed been an end-around maneuver quite similar to the Schlieffen Plan.[41] If the European weather systems of the early winter 1939 had cooperated, this plan would have been used. Poor flying weather delays gave members of Army Group A's staff time to convince Hitler the chances of success were small because: (1) the plan was too obvious; (2) the allies were ready for it; (3) in Belgium, German forces would be up against the best allied soldiers, the British; and (4) tanks of the Panzer Corps would be delayed in Holland by the thick network of time-consuming water obstacles.[41]

Hitler bought the arguments, ordered changes, modified the force mix of tanks, aircraft, and airborne-glider forces, and completely fooled France.

Before these changes were ordered by Hitler, it was Army Group B's mission to conduct the main effort. Now, General Fedor von Bock's force had the missions of seizing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EXECUTED PLAN YELLOW
MAY 1940
B Army Group
Army Group Boundary
Direction of Attack
International Boundaries
Rivers
Cities
Source: Adapted From Michelin Map No 987 (Germany, Benelux, Austria), 1976, 1:1,000,000; German High Command Maps, 1939-40.
4 77 CSP

Holland plus acting as bait to draw enemy forces north into the kill zone for the main attack move through the Ardennes.[43]

Execution by Army Group B was excellent. It caused the enemy to move far enough north to be away from the main attack plus it captured all of the Netherlands in five days.[44]

Order of Battle

General von Bock commanded a force of two armies and two air fleets. His Sixth Army (General Walther von Reichenau) operated in the southern portion of the Army Group area, primarily in Belgium; the 18th Army (General Georg von Kuechler) captured Holland; the two air fleets supported an army each.[45]

To impress the enemy's intelligence services, the Sixth Army was the strongest of Bock's forces with 21 infantry divisions, two armored divisions, and one battalion of airborne-glider forces.

The 18th Army consisted of nine infantry divisions, one armored division, and four battalions of airborne forces working with one air transported division.

Transportation

After the 1914-18 war, Germany upgraded the railroad system adding more spurs in the western border area. The present day autobahn system was begun, but not oriented to support operations in western Germany; however, the existing

main road system was more than adequate to support military operations.

Panzer and Luftwaffe units were the significant change in the mobility of the German Army since 1918. The Panzer's tanks plus accompanying motorized infantry brought superior mobility and firepower to the fair-weather battlefield. Aircraft had improved in ability to haul tonnage to the point where they could deliver significant ordnance loads on targets, in addition to lifting parachutists or towing gliders. Horse-drawn artillery was being replaced by self-propelled weapons. The combination of daily rates of advance three times those of 1914 with responsive, accurate direct air support coined the term Blitzkrieg; compared to Kluck's 1914 advance, it was lighting war.

Army Group B Concept of Operations

To accomplish its mission, operations were two-phased: attack on a broad front into Belgium and Holland to occupy territory and convince enemy forces that it was the main attack; participate with other German forces in the final attack on France.

During phase one, the heavily weighted Sixth Army would pass through the narrow southern portion of Holland, cross the Meuse-Maas-Albert Canal north of the updated Liege defensive line, that ended at Fort Eben Emael. Glider-parachute landings, along with air strikes would be decisive in

forcing the north-south water barrier, plus convincing enemy intelligence it was the main German effort. The attack would continue west to penetrate Belgian defensive lines near Brussels, also supporting the effort of the main German force having by this time passed through the Ardennes and striking west-northwest to the North Sea.

The Holland portion of the initial phase was large-scale parachute and air landings combined with ground operations of the one Panzer and nine infantry divisions. The airlifted forces would occupy critical bridge sites between Rotterdam and Antwerp, important Dutch airfields, plus attempt to seize the government at the Hague. Except for the Hague and some airfield operations, the parachute-air landing assaults were successfully joined by ground forces on D+2 and D+3.[46]

Belgian-Dutch Road System Classification

The Dutch road system was classified as national, provincial, and minor roads. National and provincial roads were 6-8 meters wide, with concrete, asphalt or brick surfaces, minor roads, 3-6 meters wide, surfaced by brick or cobbles. Dual-laned national roads connected Amsterdam-the Hague, the Hague-Rotterdam, Rotterdam-Dordrecht, Geldermalsen-'s Hertogenbosh. Bridges on the national roads were capable of supporting 14 tons, the standard elsewhere was 3 1/2 tons. Ferry service was common for river and canal crossings, even on national and provincial roads.[47]

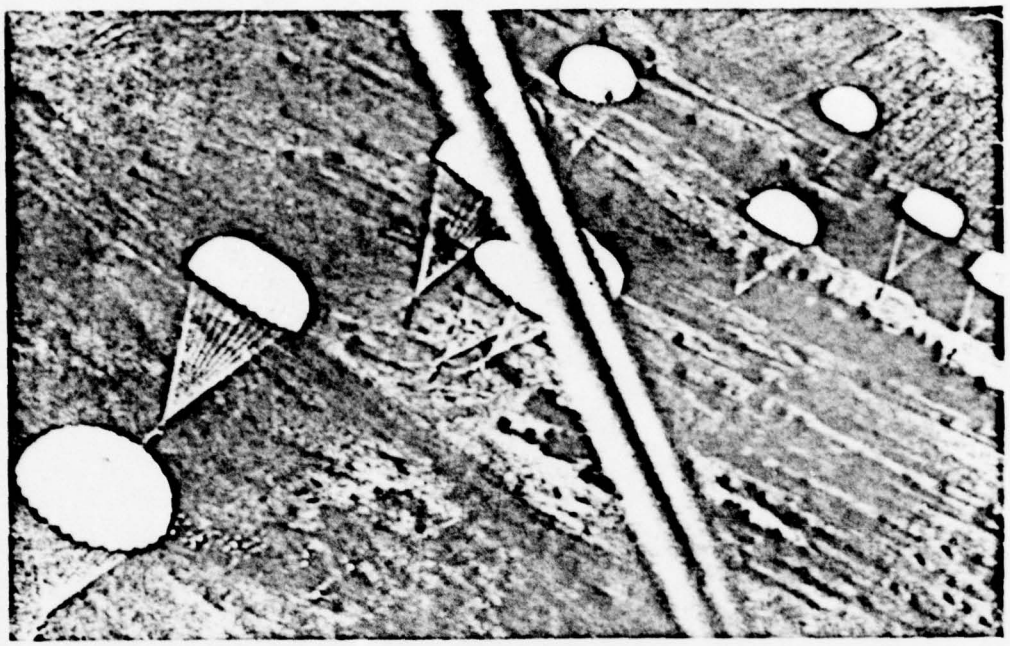
Main roads from Germany into Holland were two-laned, 6-8 meters wide. South of the Waal-Lek river system, were six main routes: Aachen-Maastricht, Aachen-Roermond, Gladback-Roermond, Geldern-Gennep, and Cleve-Nijmegen. Minor roads in this area were Wassenberg-Roermond, Bruggen-Roermond, and Bruggen-Venlo.[48]

North of the river system, three main roads led into Holland: Emmerich-Arnhem, Osnabruck-Enschede-Hengelo, and Bremen-Oldenzaal-Hengelo. Minor roads crossed to Doeteinchem, Winterswijk, and Oldenzaal.[49]

The Belgian road system remained generally unchanged from 1914 in its capability to support military operations. The damage done during 1914-18 had been repaired, in some cases the roads widened or resurfaced with concrete. State and provincial roads on both the north-south and east-west axis continued to be the best choice for high-speed routes.

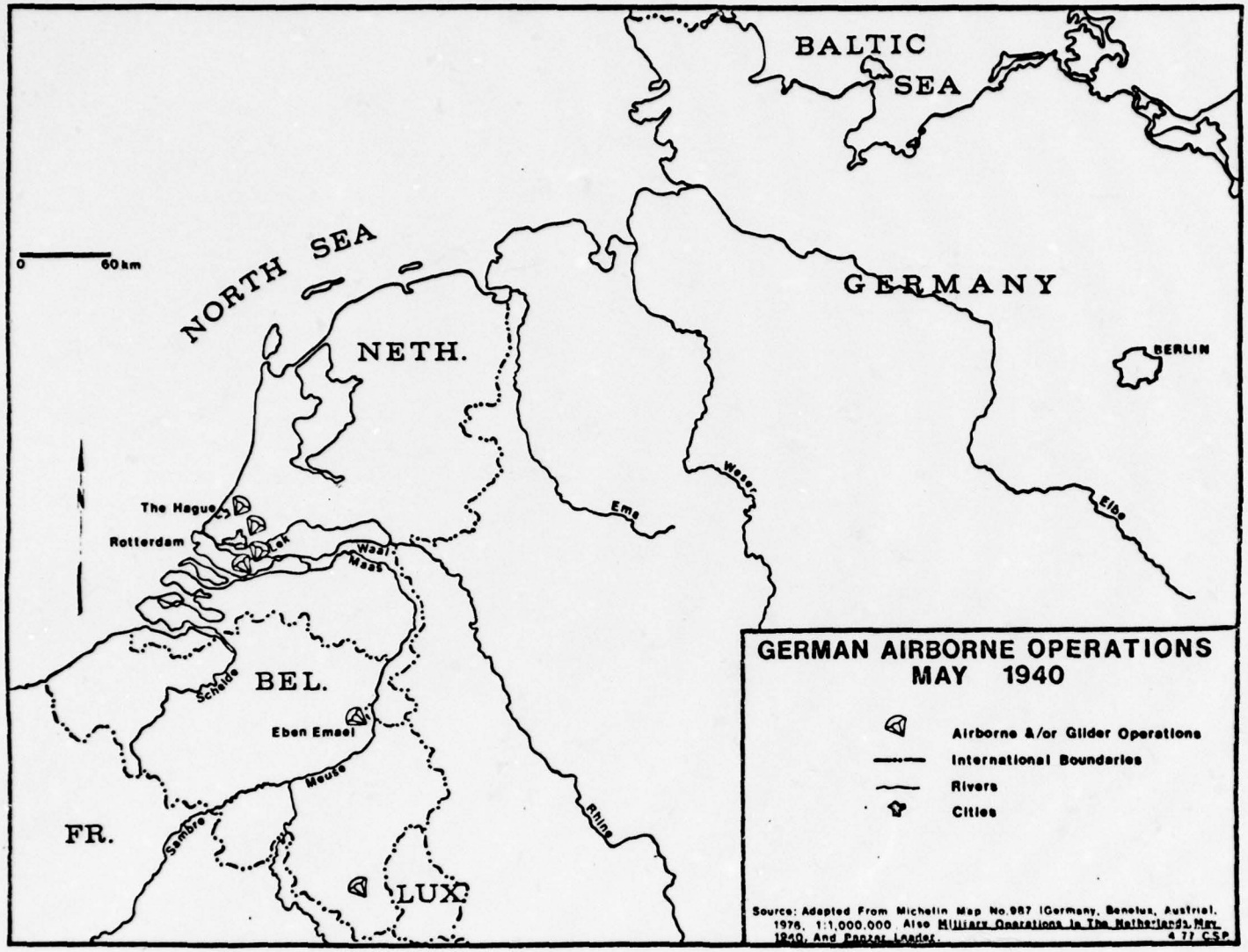
Routes and Scheme of Maneuver

The lightest strength forces along the western front were those in the German 18th Army. Though few in number, this force was composed of 80% of the elite airborne-air landing units in the German Army.[50] These forces were trained to expedite the capture of the Hague, Dutch airfields plus the critical river crossing sites on the dual-lane roads in west Holland. Control of these areas, particularly the crossing sites would significantly increase the speed of the ground forces across the Netherlands.



The Wehrmacht deployed a few hundred parachute infantry in the conquest of Denmark and Norway in April, 1940. Here, a month later, a stick of Fallschirmjaeger descend to a western Holland drop zone during the early morning hours of 10 May. They were part of the first large-scale airborne invasion in military history (Imperial War Museum, London).

The Panzer division operating in Holland had priority for the main road network between the border at Gennep to 's Hertogenbosch, north of Breda to Dordrecht and the twin bridges across the Maas at Rotterdam. Along this line of advance was placed the carpet of German parachutists joined by air-landed forces to gain, defend, and control the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GERMAN AIRBORNE OPERATIONS
MAY 1940
Airborne &/or Glider Operations
International Boundaries
Rivers
Cities
Source: Adapted From Michelin Map No.987 (Germany, Benelux, Austria), 1976, 1:1,000,000. Also Military Operations in The Netherlands, May 1940, And Panzer Leader.
4 77 CSP

crossing sites at Moerdijk, Dordrecht, and Rotterdam. These forces successfully completed their missions with ground link-up made on D+3.[51]

Not all of the airborne force operations were successful; as those landed in West Land near the Hague, were unable to capture the capital or control most airfields they had initially seized. The surviving parachutists held out in villages until the Dutch surrender on D+5.[52]

All Dutch-controlled bridges over the Maas were destroyed with the exception of the railway bridges at Gennep. Two German trains carrying infantry were able to cross this bridge, penetrate Holland 20 kilometers, dismount the soldiers for an attack against the rear of Dutch positions.[53]

The advance of the 18th Army's infantry divisions was slowed by flooding and bridge demolition. The single successful defense of a Dutch fortification was that of the Ijsselmeer dike forts, holding out until final capitulation on May 15, 1940.[54]

The critical part of the Army Group B role in the offensive was within Sixth Army's area. Here the main effort was north of Liege, a simulation of the Schlieffen Plan march to Brussels. Speed was the paramount requirement in crossing the Meuse-Albert Canal, then move to force the issue with the French, Belgian, and British forces east of Brussels. Germany employed its secret weapon: glider-landed

forces supported by parachute infantry to seize the critical crossing sites.

Key to defense of the river-canal system was the northern fort of the Liege system. Post World War One constructed, it was modern, heavily gunned, with the capability to stop ground assaults from the east. To defeat this fort at Eben Emael, a battalion of German parachutist was trained in glider operations; the gliders were piloted by former members of the German Olympic soaring team. At H-Hour on D-Day, this force landed on the double football field-size flat roof of the fort, destroyed principal gun emplacements with newly developed shaped charges, then waited for ground reinforcement.[55]

Occupied with the German force on its roof, the fort was unable to command in time the destruction of two of the three bridges between Holland and Belgium, these were captured by the remainder of the parachute battalion. However, ground-link-up with these crossing site security forces was delayed one day by Dutch frontier guard destruction of the bridges in Maastricht.

On D+2 German tank and motorized divisions were again heading for Brussels. The road network stretching before them was identical to that used by General von Kluck in 1914. Kluck's forces crossed the same terrain on foot and horseback in five days, the Sixth Army took six, due to the delaying tactics of the British and Belgian armies. In 1914

the German forces had swung southwest at Brussels, in 1940, in support of the main drive coming out of the Ardennes through northern France, Bock's forces headed northwest to assist in the destruction of the allied armies along the North Sea.

The deep cut and steep banks of the Albert Canal west of Maastricht was considered a major tactical obstacle to a German drive in 1940. This canal bridge, 8 kilometers north of Fort Eben Emael was captured intact by a combined glider and parachute force early on 10 May 1940. The next day Panzer units crossed it enroute to Brussels and the North Sea.

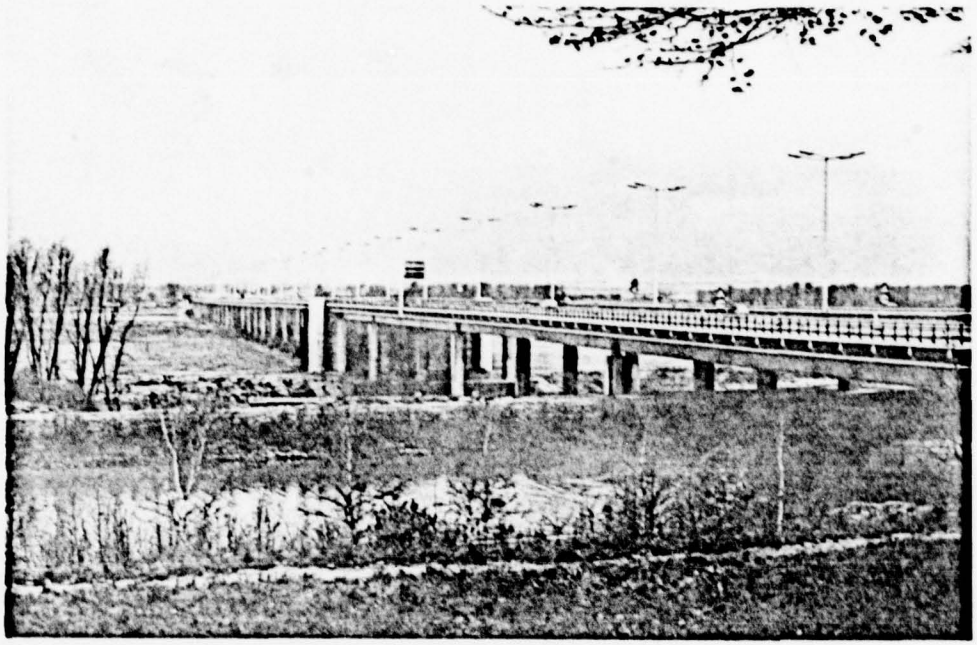
Route Selection in 1977

Today, the solution to the same tactical problem of Army Group B could best be solved by using its scheme of maneuver. The best routes continue to be along the same axis of advance, the differences are found in the modern road network for traffic three or more times faster than the 40 km/h tanks of the Panzer division. Those 1940 best available routes are now often considered minor truck routes; admittedly straightened and widened, but definitely not primary high-speed routes.

The glider attack on Eben Emael to clear the Meuse-Albert Canal approaches has been overcome by events. Today, a European highway, E39 bypasses Eben Emael 14 kilometers to the north, it is even nine kilometers north of the city of Maastricht. This new, four-lane, 1.5 kilometer-long bridge system offers the commander an operational crossing site away from the built-up areas plus crossing the Maas-Julianna Canal with one structure. E39 and the bridge at Elslop must be considered a principal east-west artery for all of western Europe.

At Paal, Belgium, 25 kilometers from the crossing at Elslop, the 1977 commander would need to choose between continuing on E39 to Antwerp or moving his force southwest towards Brussels on a good four-lane state road.

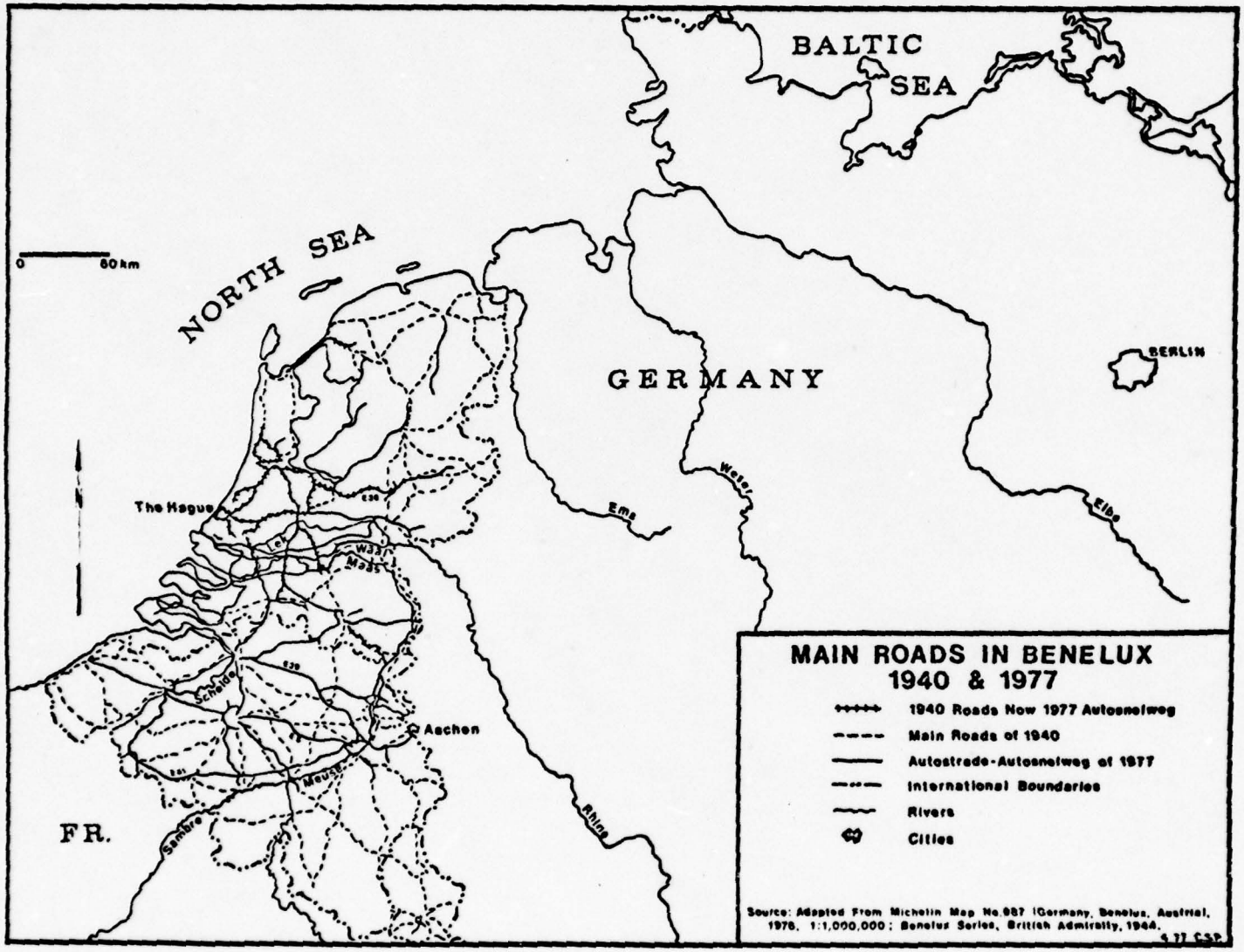
Another European highway, E5 passes nearer to Liege, a direct route to Brussels. Only five kilometers west of Liege, E41 branches off E5, a direct route parallel to the



North of the Liege-Maastricht area passes European route E39 (Aachen-Antwerp), spanning the Maas-Juliana water obstacle with a first-class bridge capable of supporting the heaviest military vehicle. Looking west from the Dutch city of Elslop, the 1.5 kilometer-long bridge crosses the Juliana Canal in the foreground, then into Belgium. Numerous landing and drop zones give the 1977 commander helicopter or parachute options.

Meuse past Huy, Namur, Charleroi, Mons, Lille, terminating at Dunkerque. The complete autostrade system in Belgium has 600 kilometers of European highways connecting all major industrial, port, and population centers.

In the 18th Army area in the Netherlands, the rivers, streams, and canals continue to be obstacles, but the road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MAIN ROADS IN BENELUX
1940 & 1977
1940 Roads Now 1977 Autosnelweg
Main Roads of 1940
Autostrade-Autosnelweg of 1977
International Boundaries
Rivers
Cities
Source: Adapted From Michelin Map No.987 (Germany, Benelux, Austria), 1976, 1:1,000,000; Benelux Series, British Admiralty, 1944.

system has been significantly improved since 1940 and the combat destruction of 1944-45. Double the amount of European high-speed routes follow the general paths of the advancing German Army in 1940, leading from the German border to Breda, Dordercht, Rotterdam, the Hague, Utrecht, and Amsterdam. North of the Maas-Waal river system, where historically the roads were of poorer quality, the high-speed routes have been upgraded by the building of European standard highways. As in the south, the road system available in Holland far surpasses the requirements of World War Two tanks, trucks, and personnel carriers.

Summary

German forces won the battle of Holland and Belgium. The success of the combined ground and air tactics have been emulated by the major powers ever since. The World War Two tank proved a master of the dry ground battlefield when it showed maneuverability combined with its organic firepower. Dry roads were essential for Blitzkrieg units; the September, 1939 operations in Poland and May, 1940 operations in the Benelux gave General Bock's forces the required firm trafficability. With mobile infantry, artillery, and supported by close air strikes, the Blitzkrieg concept became synonymous with a winning battlefield combination.

Credit for the victory must be shared by the German staff officers who convinced Hitler that Army Group B should be bait; the main attack carried through the Ardennes. It

was a guts call, one that was decisive in the defeat of the allied forces in western Europe.

In the low countries the German generals had learned well the lessons of main road and crossing site control. These lessons were applied to the situation of 1944-45 when they became confronted by the returning allied armies under the command of Generals Bradley and Montgomery.

CHAPTER IV

GENERAL OMAR N. BRADLEY

SEPTEMBER 1944-MAY 1945

Background

By the time General Omar N. Bradley arrived on the continent with the 12th Army Group, the battle for control of Europe had been in progress for over four years. German forces' execution of Blitzkrieg war in May-June, 1940, succeeded in gaining control of France and the low countries. Continued control of this area was by a line of defense along the North Sea. This Atlantic Wall had priority in equipment and maintenance over the West Wall (Siegfried Line) at the German border with France, Belgium, and the Netherlands.

German generals expected an enemy invasion attempt into France; the goal of winning France and the Benelux the prelude to a final coordinated attack into Germany; while at the same time, the Soviet Army attacked from the east. They did not know if the attack from the west would come into Germany from north or south of the Ruhr. South of it, the West Wall would contain the attack, north of the Ruhr, by a mobile force of tanks and infantry.

When the western attack came in June, 1944, defense of the French coast had not gone according to the German plan.

Hitler, convinced that Normandy was a secondary effort, held back counterattack Panzer units until it became too late for them to be effective.[56] The German Army was unable to control the July breakout from the hedgerows, contain the armored force dash to Paris or beyond to the German border area. There, in September, 1944, the advance slowed, due to lack of fuel for tanks and trucks more than a result of German defensive actions.

The summer of 1944 allied advance halted along lines stretching from the North Sea coast in Belgium, north of Brussels, southeast into Luxembourg and France, ending at the Swiss border. These stable lines gave the German Army enough time to begin reorganization, prepare defensive lines along natural water obstacles plus the West Wall, and move additional tanks to Panzer units from the closer Ruhr factories.

The two allied Army Group commanders in the north, Bradley and Field Marshal Sir Bernard L. Montgomery, had conflicting views on the best approach to solve the problem of a decisive attack into Germany to both destroy the German Army plus control the Ruhr and other key areas of the Reich.

In the opinions of Bradley and Montgomery, the decisions of their immediate commander, General Dwight D. Eisenhower, were never totally satisfactory. In the final analysis, it was not Eisenhower's decision as to which force had priority,

but lack of fuel, the worst weather conditions seen in years, and German counteractions that delayed for seven months the breakthrough along the Rhine and West Wall.

Order of Battle

General Bradley's 12th Army Group consisted of a force of four United States Armies. This force was made up of armored and infantry division maneuver units. Two airborne divisions, while assigned to his command, were attached for operational control to General Montgomery's 21st Army Group (see Chapter V).

The First Army (General Courtney H. Hodges) was composed of seven infantry and two armored divisions; Third Army (General George S. Patton, Jr.), 12 infantry and six armored divisions; Ninth Army (Lieutenant General William H. Simpson), nine infantry and two armored divisions; and 15th Army (Lieutenant General Leonard T. Gerow), five infantry, two armored, and two airborne divisions. The 33 infantry, 12 armored, and two airborne divisions under General Bradley's command comprised the largest military force in western Europe. The larger size of his force, when compared to that of Montgomery's, was influential in Bradley's opinions carrying a great deal of weight in conversations with Generals Montgomery and Eisenhower.[57]

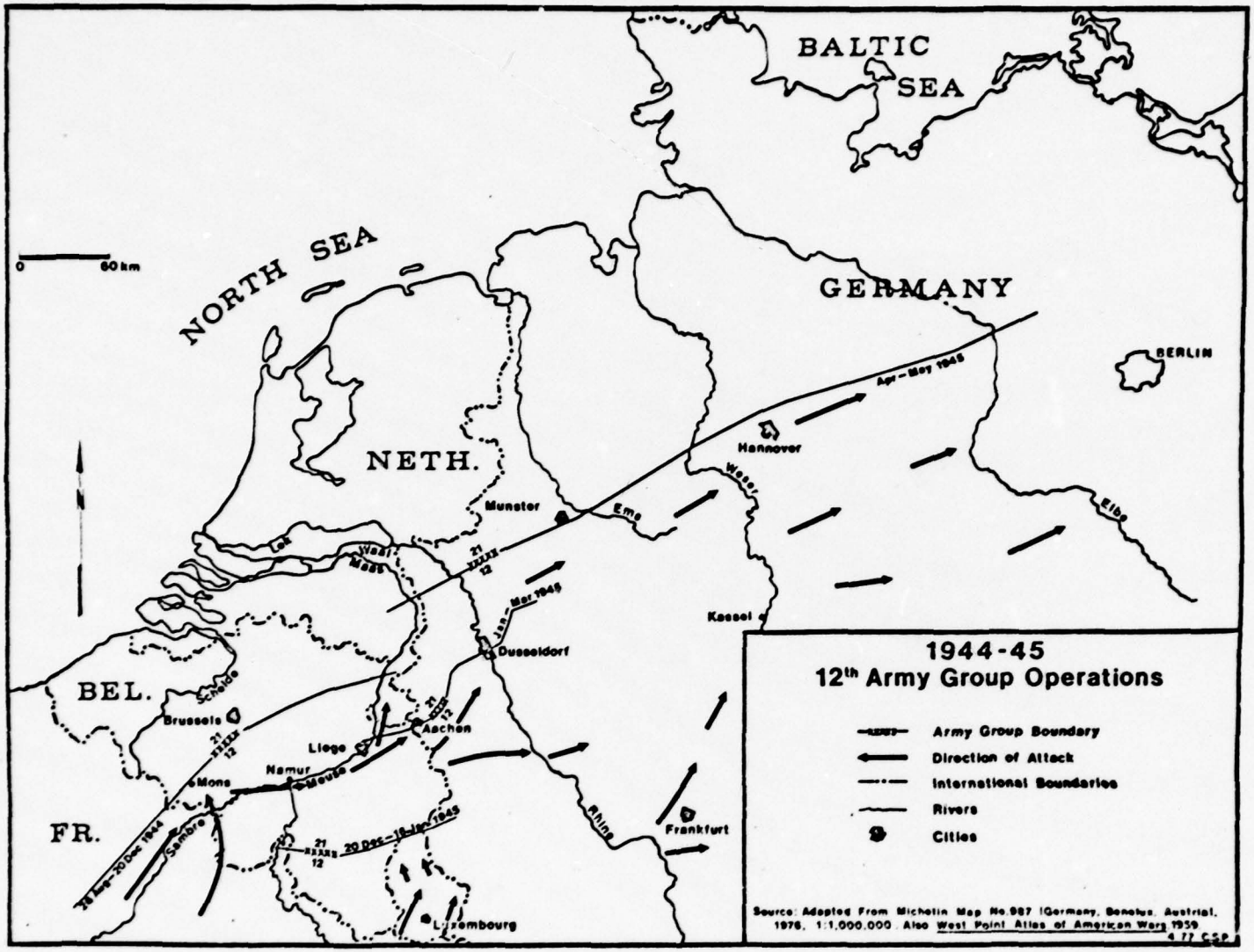
Transportation

The divisions of the 12th Army Group were composed of United States Army units, predominantly truck-mounted infantry and tank-armored forces. Large formations of truck units brought supplies forward and moved infantry forces laterally. Engineer units maintained the road network, built bridges, and field fortifications throughout the battle area. Fleets of cargo-personnel carrying aircraft supported the movement of infantry forces. Tactical close air support and domination of the air, weighted the battle heavily on General Bradley's side. He enjoyed available mobility many times that of the German forces, which in one case, the Ardennes offensive of 1944-45, was instrumental in the defeat of the German penetration.

Concept of Operation

In the early Fall, 1944, it was the mission of the 12th Army Group to support the main attack that would be conducted by the 21st Army Group (Montgomery) in the north. Bradley would attack east to the Rhine while the Montgomery force would cross the Rhine north of the Ruhr, using the northern German plains for the primary route to Berlin.[58]

The failure of the 21st's attack in the Arnhem area of the Netherlands required a shifting of emphasis from its zone to that of the 12th. During October-November the 12th would attack across the Rhine south of the Ruhr while an


BALTIC SEA
NORTH SEA
0 60 km
GERMANY
BERLIN
NETH.
Munster
Hannover
Apr – May 1945
Weser
Ems
Elbe
Kassel
Dusseldorf
Mar 1945
BEL.
Brussels
Liege
Aachen
Namur
Mons
Meuse
Rhine
Frankfurt
FR.
Sambre
Luxembourg
1944-45
12th Army Group Operations
Army Group Boundary
Direction of Attack
International Boundaries
Rivers
Cities
Source: Adapted From Michelin Map No.987 (Germany, Benelux, Austria), 1976, 1:1,000,000. Also West Point Atlas of American Wars 1959

attack of equal strength was carried out in the north by the 21st.[59]

The final decision was that in March-April, 1945, the main effort would be a 12th Army Group attack south of the Ruhr, advancing to the Elbe and east to Czechoslovakia and Austria. The 21st would cover the northern flank of the 12th and drive for the Elbe and the Baltic Sea.[60]

Road System in 1944-45

The allied air interdiction program against lines of communications in the Benelux and Germany had destroyed many of the bridges, roads, and tunnels. German forces had initially upgraded the existing road system of 1940, but after the start of the interdiction program, were concerned more with the basic maintenance of the roads to support military convoys.

The road system in Germany was still the best found in Europe. The new autobahn system connected the Ruhr with major cities along the western border. Under increasing air attacks, these highways continued to be effective and heavily used for resupply of troops at the West Wall. The density of roads east of the Ruhr decreased, as did their ability to support heavy vehicles.

The road network of the Belgian and Luxembourg Ardennes had not been significantly changed since 1914, though a few of the major roads were asphalt treated. Few of the roads

had been straightened or widened, at best they were wide enough for two-wheeled vehicles to pass but seldom two tanks.

Routes and Scheme of Maneuver

In the month before the invasion at Normandy, it was decided by General Eisenhower that the Ruhr was the primary objective of the attack into Germany.[61] After the capture of Paris in August, 1944, the armies were pointed northeast towards the Ruhr objective. While each Army Group found the going easier than expected, each of its commanders attempted to convince Eisenhower of the importance of his advance; that he should have the main support in fuel, resupply plus tactical air strikes and air cargo lift.

Falling back to the May, 1944 decisions, General Bradley was ordered to support the attack of Montgomery with one of the United States Armies.[62] By September, against light opposition, the tanks and trucks of the combined allied armies moved via the main and secondary roads of Belgium and Luxembourg to a point near the West Wall of Aachen. When by-pass of obstacles was required, the hard, dry surface of terrain supported the tanks and trucks.

Bradley's force supported the operations of Montgomery by executing limited objective attacks towards the Rhine. Failure of the 21st drive into Germany, via Arnhem, and its subsequent orders to finally clear the port of Antwerp,

shifted the main effort to Bradley. From Aachen south, he was to close his force on the Rhine, establish bridgeheads on its right bank, then advance east. In conducting these operations, heavy traffic, narrow roads, demolitions, and poor surfacing of the main roads required the force to move cross-country. Though the road system was a severe hindrance, it must also be noted that the Germany Army was conducting a more determined defense in all of the West Wall actions.

Attacks across the Rhine were delayed by six weeks when before Christmas, 1944, the German Army reserves were committed to a large-scale counter offensive. Following routes through the forests and over the hills of the Ardennes, Army Group B (Field Marshal Walter Model) attacked a weak sector between the 12th and 21st Army Groups. The objective of this attack was to cross the Meuse and capture the port and supplies at Antwerp.[63] Some 125 kilometers west of the start line, Model's force had to win the objective before the poor flying weather turned adequate for allied air support, and the Americans and British could regroup and attack the exposed flanks of his penetration. Heavy snow, poor roads, and some stubborn defense at St. Vith and Bastogne, where key road junctions were located, were causes of the German failure. On Christmas, the allies were able to employ their superior bomber forces plus attack the flanks of

Model's Panzer units with the armored divisions under Patton. The German offensive here caused a lengthening of the war by a minimum of six weeks.

In December, 1944, American armor counterattacked German penetrations along the available Ardennes roads. Deep snow caused unsatisfactory trafficability, requiring frontal attacks down the narrow roads. Shown are US tanks moving past rows of battle scarred trees outside of Samree, Belgium (Imperial War Museum, London).

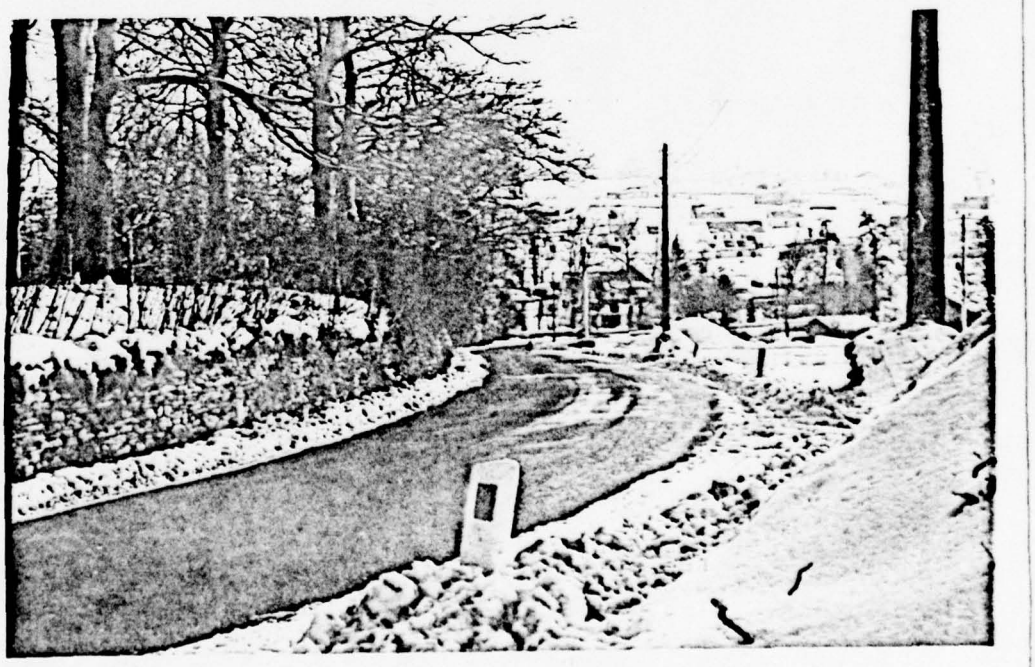
With the bulge in the Ardennes sector finally erased, the forward movement of Bradley's Army Group continued to be measured in a few kilometers a day due to torn up roads and wet ground. Once to the Rhine, across it, and with access to a more modern road network south and north of the Ruhr, daily rates of march increased significantly. The Ninth Army (Simpson) was returned to Bradley's control once Montgomery had crossed the Rhine. This force employed the lessons learned from the German attacks in 1940 and the allied advance in the summer of 1944, advancing rapidly across the Weser to Hannover and Brunswick to close on the Elbe. Maximum effort by Simpson's soldiers to rush water barriers with high mobility forces, and if possible capture intact existing bridges or use military bridging kept close to the front, was the name of the game. Total domination of the air by allied fighters, and a weakened enemy force allowed the 12th Army Group to have superior mobility over the German forces.

Route Selection in 1977

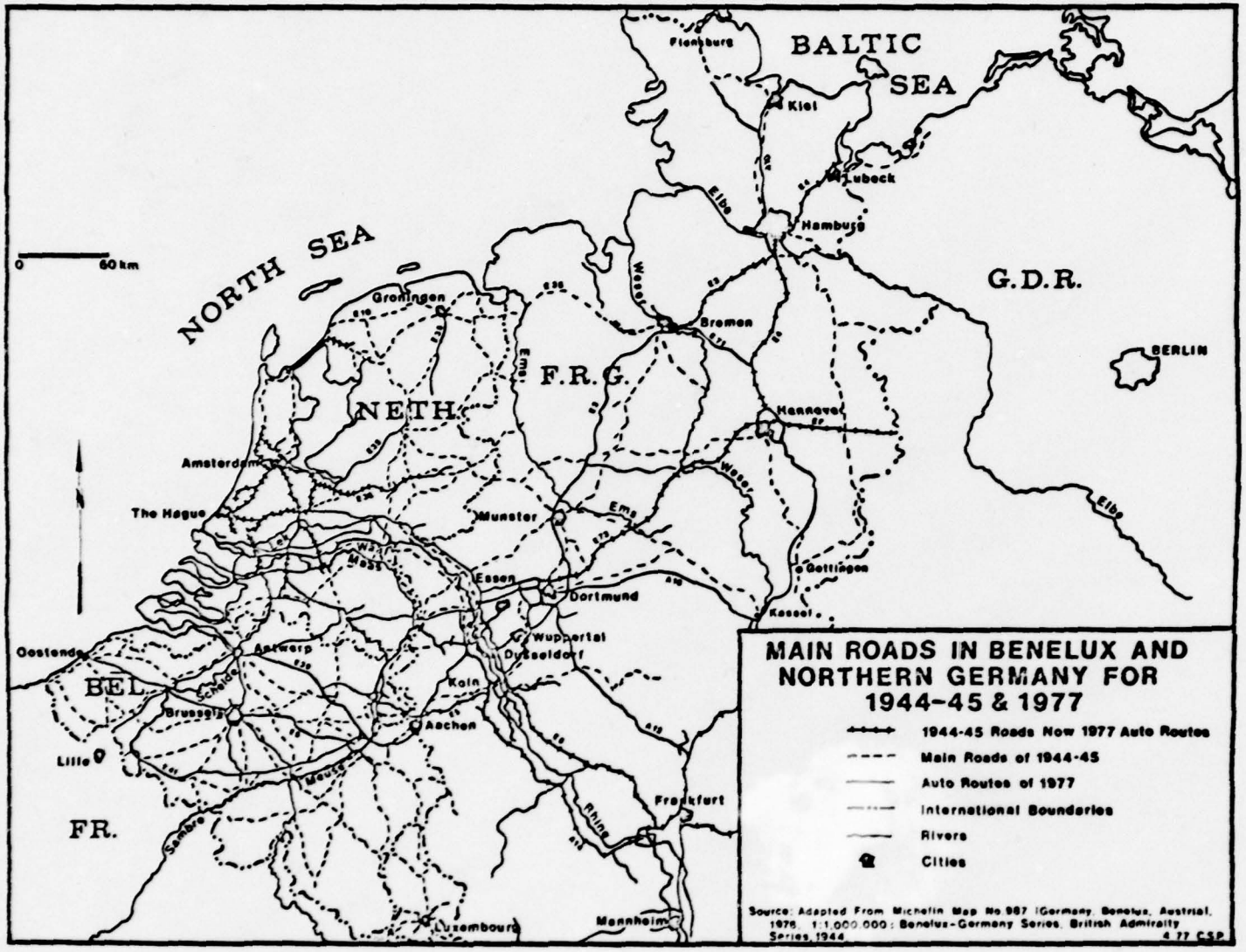
Based on the availability of high-speed routes, the scheme of maneuver of 1944-45 would not need to be changed today. The significant differences between then and now are the networks of autostrade and autobahn, primarily on an east-west axis connecting the industrialized Ruhr with the Benelux and east to Hannover and Braunschweig. The direct European system connecting Aachen to the south of

Belgium has been discussed previously; however, this same system continues east from Aachen to the Ruhr, Koln, and Bonn. Counting railway, autobahn, and secondary roads, there are more than 20 established bridge sites crossing the Rhine between Bonn and the Ruhr.

The Ardennes road system remains very similar to that used in 1914, 1940, and 1944-45. Some major roads have been widened to four lanes, nondivded (west of Bastogne), but the hotly contested Vielsalm-St. Vith road remains narrow and hazardous during winter. The road network in Luxembourg has been relatively unchanged.



Combat operations in 1914, 1940, and 1944-45 used the Vielsalm-St. Vith route through the Ardennes north of Luxembourg. Still two lanes wide, it is now an asphalt-treated road contouring the hills of the Ardennes providing a stable surface for east-west movement of forces from Germany towards the Meuse.


BALTIC SEA
NORTH SEA
0 60 km
Flensburg
Kiel
Lubeck
Hamburg
Elbe
Weser
Bremen
G.D.R.
BERLIN
Groningen
NETH.
F.R.G.
Hannover
Amsterdam
The Hague
Munster
Ems
Weser
Elbe
Gottingen
Kassel
Essen
Dortmund
Wuppertal
Dusseldorf
Oostende
Antwerp
Koln
BEL.
Brussels
Aachen
Lille
Frankfurt
Rhine
FR.
Luxembourg
Mannheim
MAIN ROADS IN BENELUX AND NORTHERN GERMANY FOR 1944-45 & 1977
1944-45 Roads Now 1977 Auto Routes
Main Roads of 1944-45
Auto Routes of 1977
International Boundaries
Rivers
Cities
Source: Adapted From Michelin Map No.987 (Germany, Benelux, Austria), 1976, 1:1,000,000; Benelux-Germany Series, British Admiralty Series, 1944
4-77 CSP

Summary

The 12th Army Group's ability to use its mobility on the snow-packed, flooded or cratered terrain gave it the advantage. The domination of the skies, massed formations of tanks under this air umbrella, and movement of supplies by truck convoys, gave it the freedom to strike when and where the generals desired.

Terminating the friction between Bradley and Montgomery may have helped the allied war effort as well. As we see in Chapter V, the chances for success in the Fall, 1944, were weighted with the northern forces under Montgomery. His successes and failures illustrate the capabilities and limits of modern warfare in the low countries and on the plains of northern Germany; they have been corrected by the offensive-minded Warsaw Treaty Organization forces.

CHAPTER V

FIELD MARSHAL SIR BERNARD MONTGOMERY

SEPTEMBER 1944-MAY 1945

Background

As had General Bradley, Field Marshal Sir Bernard Montgomery had been actively engaged fighting German forces since the battle for North Africa. He, too, had enjoyed close working relationships with General Eisenhower, influencing the final decisions as to the course of the invasion at Normandy and the operations through the low countries to Germany.[64]

After the hard fought British battles in Normandy, disorganized German forces opposing Montgomery's 21st Army Group were unable to halt a rapid advance from Paris to Belgium, where Brussels and the port city of Antwerp were captured in two days. Though Antwerp was captured, to the west a well-executed defensive withdrawal of the German 15th Army across the Scheldt estuary to the islands controlling access to Antwerp, prohibited use of the port for resupply. In Holland, the new German commander (General Gerd von Rundstedt) organized hasty defensive areas by skillful use of natural and man-made water barriers.[65] Without fuel for operations along his entire front, it was

Montgomery's decision to break through German defenses on a narrow front, close on the Rhine, cross it, isolate the Ruhr, then march on Berlin. With firm ground and good weather for air support, he had high hopes for success.

Montgomery convinced Eisenhower this single thrust north, then west along a single two-lane road could achieve a tactical advantage; perhaps eliminating a winter campaign with a quick defeat of Germany.[66] The normally very cautious Montgomery realized that a single thrust could be easily contained if not executed rapidly and deep into the enemy's defenses. With faith in his previously successful armored units, plus the addition of an airborne army to pave the way (as Bock had done four years earlier in the Netherlands), Montgomery began the operation to Arnhem in mid September, 1944.

The operation was not a success. Failure was due in part to bad weather grounding reinforcements and supply of the airborne units; primarily it was the restriction of one narrow, elevated road for his armored force. When the ground became wet and his tanks were forced to use existing roads, Montgomery failed to achieve tactical force mobility. The main effort was never again in the north; Eisenhower's broad front policy was used to slowly, but inexorably, defeat German military forces.

After the battle of Arnhem, opening the port of Antwerp became Montgomery's critical task. Canadian forces took two weeks to clear the islands bordering the estuary; a remarkable feat when we consider the islands were flooded, roads were impassable and the attack had to be made along a narrow front well defended by a first-rate German unit.

Winter weather and deterioration of soil conditions for tracked vehicle maneuver, plus increased German strength on the West Wall, slowed the advance to the Rhine. A shifting of Montgomery's forces from Holland to Belgium and Luxembourg was necessary in December-January to counter the threat of the German attack toward Antwerp. It was March, 1945, before his forces were prepared to attack across the Rhine, to gain the northern plain, then on to the Elbe. As with Bradley in the south, once across the Rhine, speed of operations increased as warmer weather dried out fields and heath allowing by-passing of heavy route demolition and at some locations flooding.

Order of Battle

During the course of his operations in Europe, Field Marshal Montgomery had under his command two armies, the First Canadian and Second British. For operations in Belgium and Holland he also commanded the First Airborne Army. To be used in the Rhine crossing operations was the temporarily assigned Ninth United States Army.

The First Canadian (Lieutenant General Henry D. G. Crerar) and the British Second (General Sir Miles Dempsey) between them commanded 14 infantry divisions and seven armored brigades. The First Airborne Army (Lieutenant General Frederick Browning) had two United States and one British airborne divisions. When the Ninth US Army (Simpson) was attached, it increased the 21st Army Group strength by nine infantry and two armored divisions.[67]

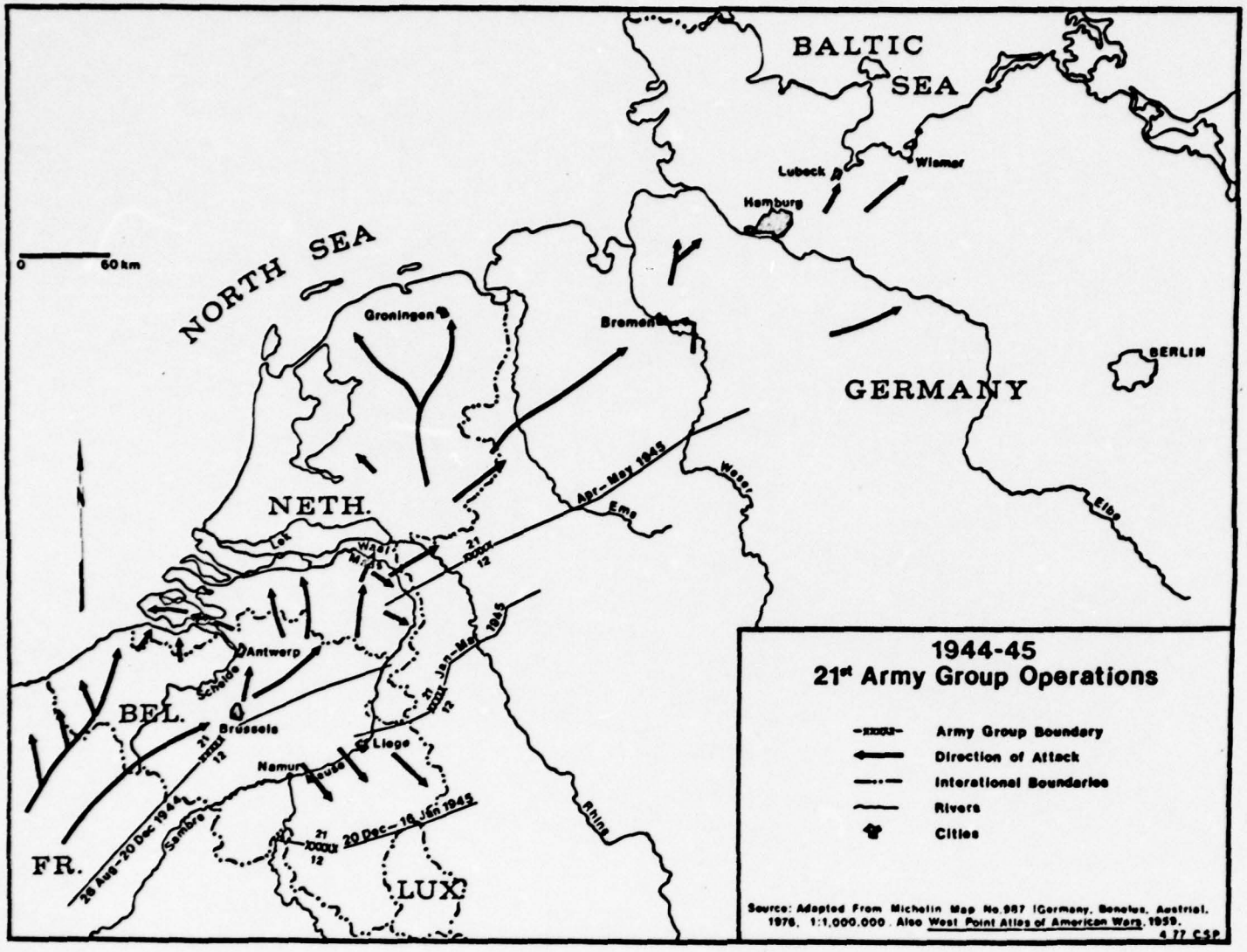
Transportation

Transportation of men and equipment behind the front lines was more limited in the 21st Army Group than with Bradley's forces. The British supply corps did not have the number of trucks needed to support operations of a large scale:[68] some use was made of the extensive river and canal system to move supplies.

With minor variations in equipment, vehicles used in combat were the same as American forces. In the softer ground of northern Belgium, the Netherlands, and northern Germany, the heavy ground pressure of vehicles became a critical factor.

Concept of Operations

In early September, 1944, the 21st Army Group was assigned the mission of capturing Belgian airfields and Antwerp, with an ultimate goal to isolate the Ruhr by crossing the Rhine to its north. Simultaneously with the


BALTIC SEA
NORTH SEA
0 60 km
Lubeck
Wismar
Hamburg
Groningen
Bremen
BERLIN
GERMANY
NETH.
Apr–May 1945
Weser
Ems
Elbe
Antwerp
Schelde
BEL.
Brussels
Namur
Meuse
Liege
Rhine
Sambre
28 Aug–20 Dec 1944
20 Dec–16 Jan 1945
Jan–Mar 1945
FR.
LUX.
1944-45
21st Army Group Operations
Army Group Boundary
Direction of Attack
International Boundaries
Rivers
Cities
Source: Adapted From Michelin Map No.987 (Germany, Benelux, Austria), 1976, 1:1,000,000. Also West Point Atlas of American Wars, 1959.
4-77 CSP

Rhine operation, it was to move forces west to open Antwerp and Amsterdam's port facilities.[69]

The priority in October became reduction of enemy forces in western Holland, which controlled the Scheldt estuary access to Antwerp. In November, the mission was defeat enemy forces in northeast Holland plus those west of the German-Dutch border. In December-January, it was required to contain the German attack through the Ardennes from penetrating to Antwerp, then destroy this force by attacks from the north.[70]

The last mission of the war, January-May, 1945, was consolidation of the west bank of the Rhine, cross it in March, advance west to the Baltic to meet Soviet forces at the Elbe.

Road Systems Available in 1944-45

The attack by allied aircraft on the road network of the low countries and northern Germany was designed to isolate German forces from their industrial base. The effectiveness of this interdiction program plus the destruction of surviving roads and bridges by German forces, made the advance of the roadbound 21st Army Group very difficult. Tanks and wheeled vehicles were required to stay on the roads by wet soil conditions. The unusually severe winter with increased amounts of precipitation, and deliberate flooding were the cause of trafficability problems; the

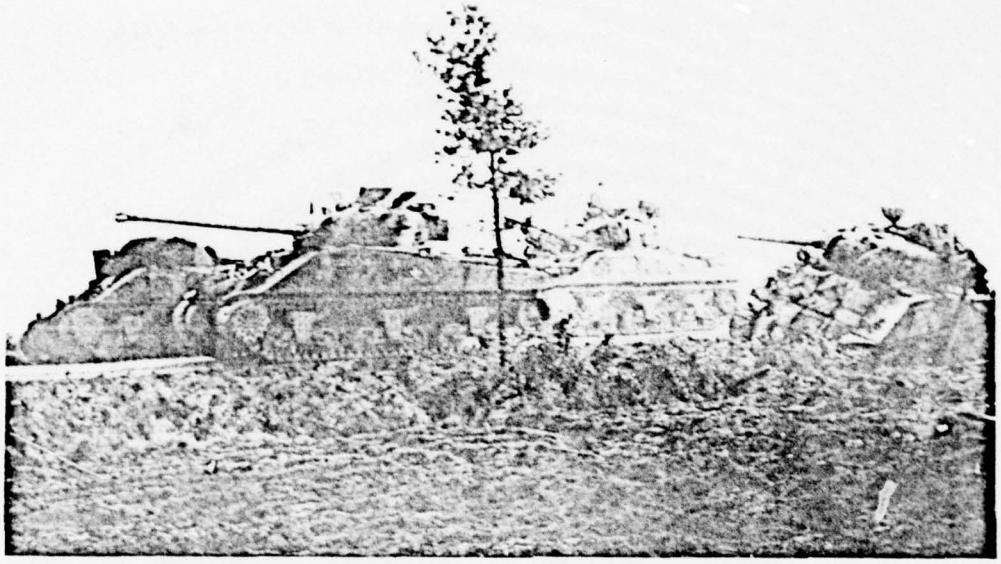
effect in navigation to objectives was that lower lying roads could be detected by bordering trees sticking above the flood.

Roads captured in 1940 by German forces had been improved, especially those on higher ground. The wear of German and allied vehicles, especially the tracks of tanks and assault guns, often collapsed the surface plus base of dike roads. Engineer equipment of the era was unable to maintain these roads for the required high density level of military traffic.

The slow advance during September, 1944, in the battle of Arnhem was due to the dike road's elevation above the polders, barely two tanks wide, and wide open to flanking defensive fires. If the tanks of the British Second Army had been capable of traversing soft polders, the Arnhem operations would have likely been successful.

Routes and Scheme of Maneuver

To avoid built-up areas along the Rhine, it was Montgomery's plan to move north through Holland, pass over the water obstacles flowing out of Germany and get his force onto the plains. This was to be accomplished by an attack along a narrow corridor via a two-lane, dike road between Eindhoven and Arnhem, about 100 kilometers. At Arnhem, the force would use the well-constructed civilian bridge across the Lek and be on the plains.



Montgomery's armored divisions were forced by Dutch polder soil conditions to use the main road from Eindhoven to Arnhem, at best two tanks wide and above the surrounding flat, open fields. The heavy use of this type of dike road during the winter of 1944-45 caused frequent total road collapses. (Imperial War Museum, London).

The road to Arnhem would be secured at key locations by an airborne-glider operation, then the tanks of the British Second Army would make the ground link-up. Montgomery depended on the enemy's continued disorganization from its retreat in France; weather adequate for air resupply of

parachute forces, plus allow air strikes; and with an adequate road to support armored operations. His forces were immobilized when these factors did not occur.

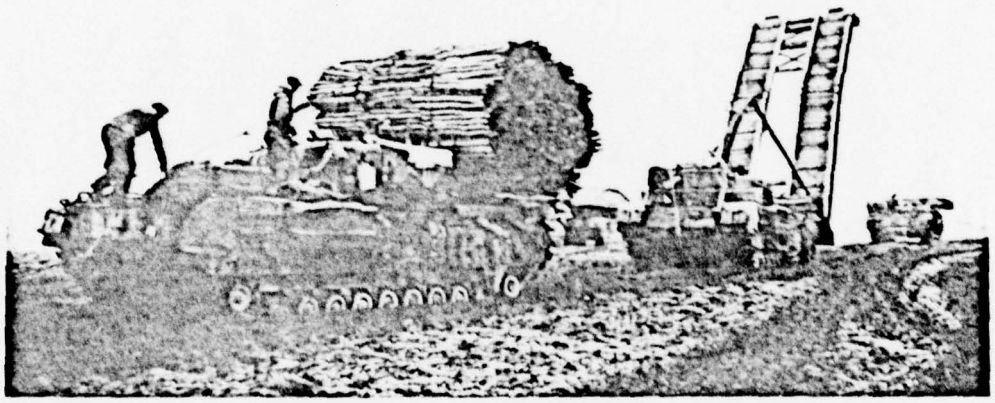
Failure of the offense confirmed the requirement for close-at-hand supply depots; the answer was Antwerp. The major shift in emphasis to clear the Scheldt estuary islands took valuable fall weather time. Once clearing operations began, it was a major effort to force the German positions as the islands were heavily flooded, German forces had been given time to prepare defenses in depth, and Canadian units were limited in maneuver space; subject to heavy enfilade fires. Final destruction of the German forces was accomplished after heavy naval gun fire combined with amphibious assaults outflanked the defenses.

When the German offensive in the Ardennes began, it was Montgomery's task to initially block it from Antwerp, later to destroy the salient. German forces had to key their advance on the limited road system between the West Wall and Meuse, then hoped to gain the better road system across the river to Brussels and Antwerp. Montgomery's counterattack was directed at the critical road junctions controlled by first advancing, then withdrawing Panzer units. As had the Germans, his forces were limited to use of the road system due to heavily forested hills with double the normal amount of snow on the ground (over two meters in many places).

With the success of his counterattack in the Ardennes, Montgomery massed men and supplies for another attempt at crossing the Rhine. This time he would have the weather, routes, and combat strength to make the operation work. In March, 1945, with the weather and logistical support heavily in his favor, he crossed the Rhine north of the Ruhr; using textbook assault river crossing techniques, plus the use of two airborne divisions dropped across the river within artillery support of the near bank. This time he scored a success: within a week was through the West Wall defenses and on the plains. From the Ruhr to the Luneburg Heath, near the Elbe, was more an engineer battle with the limited road network, than an armor or infantry fight with the German Army.

Route Selection in 1977

The north-south main system of roads in Holland has been replaced by the European system of four-lane highways connecting principal cities, while by-passing lesser towns. These super highways oriented north-south, cross the east-west water obstacles five times between Rotterdam and Nijmegen, an average of a parallel route every 20 kilometers across the width of the Netherlands. The same roads Montgomery's forces were obligated to use are still present, upgraded in width and roadbed strength, though still on top of dikes.

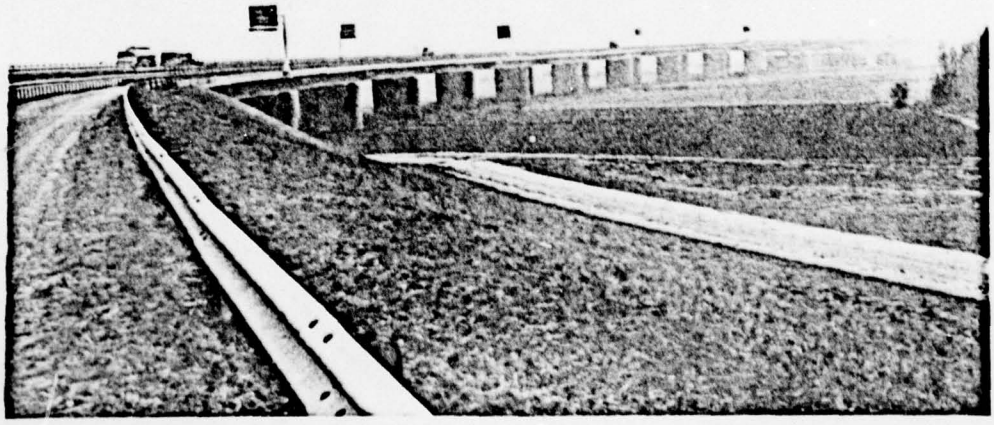


By February, 1945, Montgomery's engineers had modified tank chassis to accommodate locally produced or modified bridging and road maintenance equipment. A corduroy road matting vehicle follows two bridge vehicles close behind British infantry on the Northern German Plain (Imperial War Museum, London).

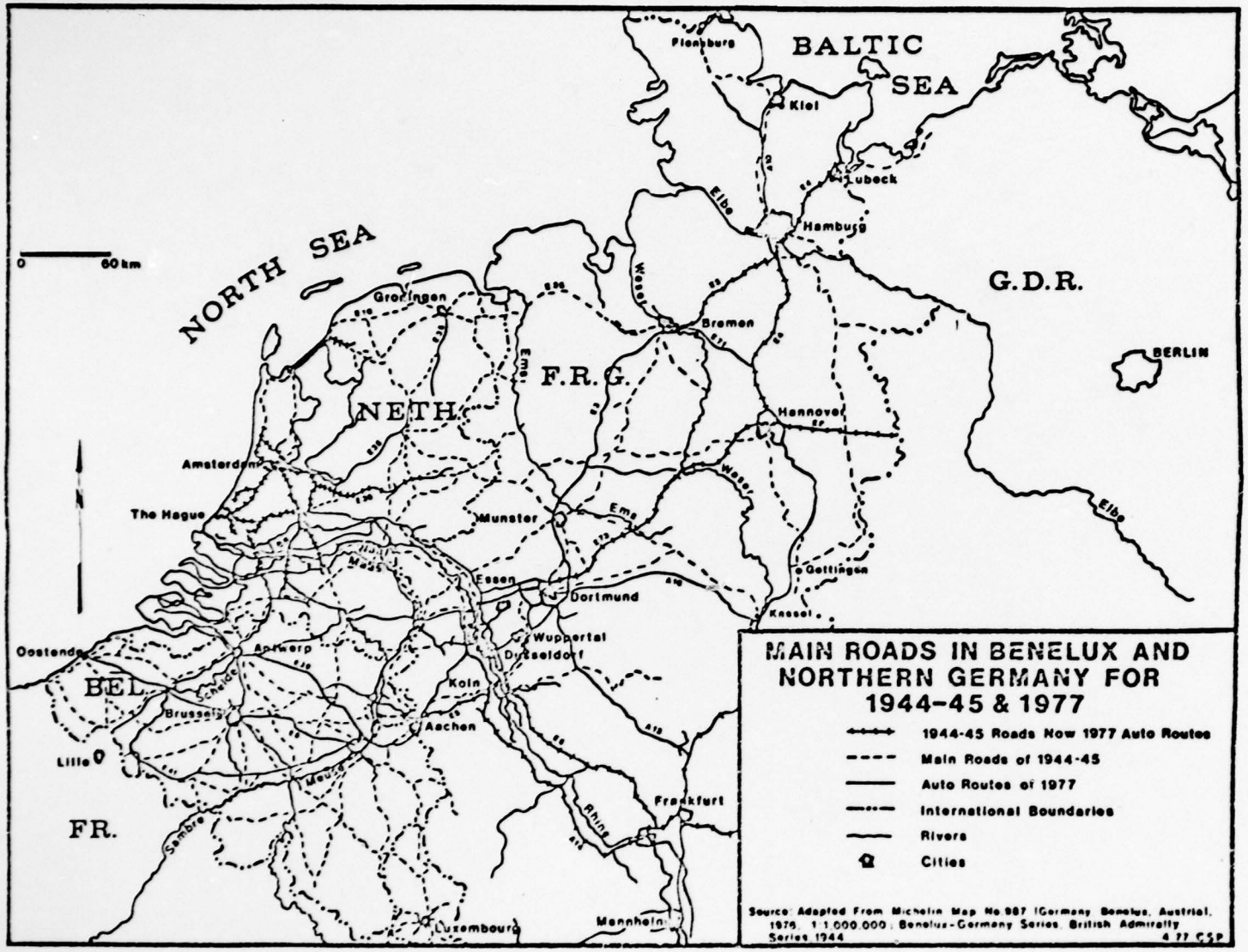
In the west of Holland, the east-west road near Bergen-op-Zoom towards Vlissingen is now of European standards, is elevated above potential flood; a much drier route than available to the Canadians in 1944.

Crossing the Rhine in the vicinity of Rees and Wesel, the force would find state roads similar to 1945 until near

Munster, where a German autobahn begins European class highway routes east to Hannover and Bremen-Hamburg. Since 1945, all of the roads in western Germany have been repaired, with new bridging capable of supporting military vehicles. Once on the plains, the roads become first-class, multiple routes towards the Baltic and the Elbe.



Another example of a new bypass of old intercity crossing sites is the E96 bridge west of Arnhem. In conjunction with a modern highway system in the area, this bridge crosses the Lek a few kilometers west of the September, 1944 British evacuation site. The bridge would be the objective for a planned crossing of the Lek.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Bremen
Hannover
Groningen
Amsterdam
The Hague
Munster
Essen
Dortmund
Wuppertal
Dusseldorf
Koln
Aachen
Antwerp
Oostende
Brussels
Lille
Frankfurt
Mannheim
Luxembourg
Gottingen
Kassel
Elbe
Weser
Ems
Rhine
Meuse
Sambre
0 60 km
MAIN ROADS IN BENELUX AND NORTHERN GERMANY FOR 1944-45 & 1977
1944-45 Roads Now 1977 Auto Routes
Main Roads of 1944-45
Auto Routes of 1977
International Boundaries
Rivers
Cities
Source: Adapted From Michelin Map No 987 (Germany Benelux, Austria), 1979. 1:1,000,000; Benelux-Germany Series British Admiralty Series 1944
4 77 CSP

Summary

Though quite abrasive, Montgomery was probably correct in fighting for his option of having the main allied effort in the north. Under the circumstances of Fall, 1944, I would have backed his force with the full weight of the armed forces.

Given vehicles with less ground pressure, or some harder ground to run them on, the attack to Arnhem would have been carried through successfully. However, it was unable to link-up with the British airborne at Arnhem, the latter force thus lost 80% of its men. The loss of those seven thousand men was less significant when compared to failure of the Arnhem mission in September costing American forces 59,000 casualties (6,700 dead, 33,400 wounded) in the one-month battle in December-January in the Ardennes.[71]

Perhaps if the personality conflict between Montgomery and Bradley had been controlled with reason instead of national pride, the main effort would continue to have been oriented north and most of the campaigns of 1945 avoided.[72]

Since the battles of 1944-45, the armies of eastern Europe have solved the problems of tactical bridging, trafficability over soft terrain, inability of tactical vehicles to ford deep canals and streams, and the poor or nonexistent swimming ability of personnel carriers and light reconnaissance tanks. Now, the plains are indeed wide-open maneuver grounds for modern Blitzkrieg operations.

CHAPTER VI

POSSIBLE WARSAW TREATY ORGANIZATION OPERATIONS IN NORTHERN GERMANY AND BENELUX COUNTRIES 1977

Background

In the years since the end of World War Two, a great deal of growth has taken place in both the western areas of Europe we have looked at in the preceding chapters, and in the armies of Europe's modern nation states. It could be considered a tossup as to which has changed the most; the population centers and road systems, or the capabilities of armies to negotiate the terrain. Without question, the limitations of increased built-up population centers are overcome by better by-pass roads and military vehicles to complement road and cross-country movement.

The European standard road system, built since 1945, is the most significant change in road systems. Standardization of routes between countries has made road travel of 160 km/h relatively safe, while use of the wider roads permits a much heavier traffic density.

The trend in western Europe has been to build the standard European system parallel to main routes already used. Though commercial reasons are the obvious reason for

the expenditure of such large sums, the military commander views these roads as possible avenues of approach; what he must defend; or on which he may have to withdraw his forces. Commanders need to control these routes, for if they do not and the enemy gains access, the advantage goes to him.

A part of successful tactical operations is knowing the distance from your location to, let's say, an enemy tank coming your way. In the United States the National System of Interstate and Defense Highways measures distances in miles. In Europe, the measurement is in kilometers; at some locations in the Netherlands a marker is placed every one hundred meters. Range estimation along these new roads then becomes a simple operation: a minor, but worthwhile addition since World War Two to ranging direct and indirect fire weapons.

The weather of western Europe remains fundamentally poor for combat operations: especially during Fall and Winter, visibility is reduced to one kilometer or less about one out of three mornings. During December-February, ceilings of 300 meters or less degrade close air support by one-third. The best weather for operations is June-September when the mean temperature is 14°C; mean rainfall only 27cm; and four days of morning fog per month in summer lasting about three hours (as compared to 10 days per month in winter and lasting for six hours).[73]

The human geography changes in the Benelux and northern Germany have been the new road networks and the increase in urban and rural population centers. The Ruhr has grown to be over 1100 square kilometers, there is no longer any real distinction between the cities of that region of Germany.[74] The metropolitan centers of each country have grown out from the central city to cover areas twice that of 1945. Significant as these urban areas may be to military operations, it is the growth of rural towns and villages which affects maneuver.

For example, in Germany there are standard villages which have been growing at a fairly steady rate over the centuries; but now, strip areas have begun to grow up along streams, canals, and roads between these villages. The brick and concrete construction of the buildings in these strip areas present to an attacker the approximation of a fortified line. With many of the modern highway systems in Germany and the Benelux by-passing the larger cities, in order to avoid the congestion and restrictive nature of cities, the strip areas of house, store, and factories are closing in on the new road systems: providing the same advantages to a defender and disadvantages to an attacker as the less-wide roads used earlier in the century.[75]

Two towns or villages of equal size may have different operational value; this factor is evaluated by how restrictive the adjacent terrain is and if routes of communications

pass through them. For the defender and attacker alike, there are some small villages that will have to be controlled for operational success, while much larger towns, one might think were valuable, can be avoided or forgotten.

Modern Military Mobility

Several technical factors have led to the tremendous increases in armies to negotiate roads or soggy open fields at high speeds plus move large formations of soldiers by air. For ground vehicles it has been the development of lightweight aluminum armor, more powerful diesel engines, and strong scissor bridging carried on tank chassis. Transport aircraft equipped with jet engines and better navigational systems provide an accurate platform for parachutists or landing troops near the battlefield on runways. Any open field, stadium, or autobahn-autostrade clover leaf area is a landing field for the new generation of helicopter developed when light metals were matched with powerful turbine engines.

These vehicles have been armed with correspondingly sophisticated weapons that outrange and penetrate the latest systems used in 1945. To have a 50-50 chance of hitting another tank-size target at 1500 meters in World War Two, 13 rounds had to be fired, today's fire control decreases the number of rounds to one; modern tanks can penetrate twice the armor at four times the ranges than Patton's Sherman

tanks.[76]

Current tanks are bigger, higher, and heavier than the World War Two models, but they have engines twice as powerful, horsepower-to-ton ratio has increased by 25%, ground pressure decreased by one-fourth, and the maximum cruising range has been increased by three.[77]

Helicopters are divided into two groups; transport and attack. In one hour a transport helicopter can move infantry 120 kilometers as compared to armored personnel carriers going 15 kilometers, and walking infantry six kilometers in the same time. Heliborne infantry are moved up to 20 times faster than foot troops.[78]

The Soviet Army is well aware of the helicopter potential in Europe. ..."It has great advantages over the parachute method: (which the Soviet Army pioneered 40 years ago) the landing force is set down compactly, and what's more important with its arms and equipment. This makes it possible for the forces to go immediately into action."[79]

The attack role of the helicopter is still being developed by WTO and NATO forces: the probability is good it will be used in a reserve anti-tank role, committed to engage enemy armor penetrations. The attack helicopter has the capability of being a decisive weapon on the modern European battlefield.

The armored personnel carriers found in World War Two were used as thick-skinned trucks; move the infantry close

to the enemy, have them dismount, close on foot to the enemy position, then remount them for future operations. The carrier today is now considered a fighting vehicle in its own right, armed with machine guns in all armies and guns-anti-tank missiles in WTO units, plus firing ports for the infantry inside to fire while on the move. WTO doctrine has these fighting vehicles being used to carry the infantry to, through, and behind enemy positions and have the capability of keeping up with fast moving tanks. On a good road surface they can move at 80 km/h for 300 kilometers without refueling; cross-country movement is three or more times faster than troops on foot.[80]

Order of Battle

The four nations of the Warsaw Treaty Organization, Soviet Union, Poland, East Germany, and Czechoslovakia, have assembled in central Europe a force of 26 mechanized infantry divisions, 26 armored divisions, and two airborne divisions.[81] The Soviet Union has the preponderance of WTO power located opposite the North Atlantic Treaty Organization forces: yet, maintained in European Russia are another 24 mechanized infantry divisions, 12 armored divisions, and seven airborne divisions.[82] NATO forces on active duty are the equivalent of 12 mechanized infantry divisions, 10 armored divisions, and one airborne brigade (Belgian).[83] The ratio of combat power of active duty forces are 2.1:1

mechanized infantry; 2.6:1 armored divisions, and 20:1 airborne units in favor of the WTO. The troop lift helicopter force of the Soviet Union is able to conduct a simultaneous lift of 17 motorized rifle battalions.[84]

Standard equipment, training methods, and doctrine are employed by the four-nation WTO force. From the infantry rifle to the heaviest tanks, all armies used the same Soviet-made or designed equipment. Annual training exercises coordinate the input of a single Soviet doctrine into the total force.

Soviet, and thus WTO doctrine, stresses the offense. In World War One the final objective of the day was 2-4 kilometers into the enemy's positions; in 1945, 18-20 kilometers; and now doctrine requires minimum daily advances of 35-40 kilometers.[85] To make these long marches requires the Soviet commander to concentrate 20 to 25 battalions on a 10 to 12-kilometer front, in the first echelon alone there would be 600 tanks; a minimum desired ratio of 50:1 in combat power. Ahead of the tanks and personnel carriers would be inserted the essential heliborne and parachute assault forces to hold key river crossing sites.[86]

The WTO commanders are well aware of the many water obstacles that need to be negotiated in any western European operation. Their first choice would be successful control of the established bridges, but they are prepared to build

their own. The limited spanning ability of the tactical scissor bridge (about 20 meters) is supplemented with newly developed folding ponton bridges that can be laid on water at the rate of 100 meters every five minutes, a hundred times faster than World War Two equipment.[87]

Finally, of all operations practice in large-scale maneuvers and minor tactical exercises, none receives more emphasis than rehearsal of assault river crossings.

NATO Defense

The defense of western Europe is formed on a combination of forces obligated to NATO command authority. A review of US participation in this NATO force was made in late 1976 by a US Army general and two US Senators.[1] Their findings indicated that the NATO defense opposite the bulk of WTO forces, along the Northern German Plains, are the weakest part of the defense. South of the plains are the majority of the NATO ground forces; located where the terrain is less suitable for Soviet-style operations.

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[1]Senators Nunn and Bartlett have reported that five of the six Dutch brigades committed to defense in Northern Germany are still in Holland and that along with all US maneuver units the Canadian, French, Belgian, and West German forces are all west of the Rhine, in addition the British forces in Germany are understrength. (Armed Forces Journal International. March, 1977, p. 24).

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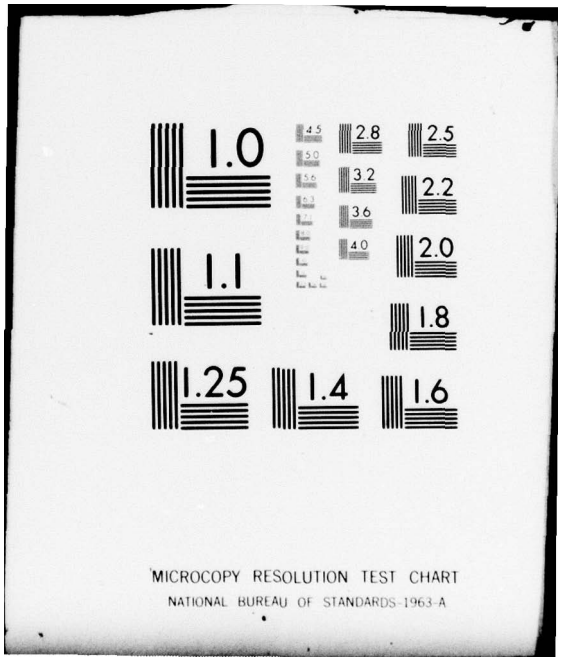
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Objectives in Northern Germany and the Benelux Countries

The objectives for conventional military operations in the area remain the same as those of World War One and Two: control the political and economic centers; and if required to accomplish this goal, the defeat of the enemy's military force. WTO physical control of the undamaged economic and political centers of northern Germany and the Benelux countries would give de facto ownership of the critical economic heart of western Europe.

The three political objectives are Bonn, the Hague, and Brussels. There are a number of economic objectives: Hamburg, Hannover, Bremen-Bremerhaven, the Ruhr, Rotterdam, and Antwerp. Military objectives are the established river-crossing sites on high-speed routes, the elevated roads, plus terrain that may control broad stretches of low ground that will be traversed by armor and infantry units.

The attempt at seizing control of this area would be the main effort in worldwide operations along the periphery of the Soviet sphere of influence.

Concept of Conventional Operations and Missions

The author, acting in the role of the commander of WTO forces tasked with an attack mission, would plan to conduct the attack as discussed below.

In conjunction with "my" main effort of the WTO in the north, there would take place conventional ground and air

attacks against NATO military bases and units along the entire front from the Baltic to Austria. The majority of NATO maneuver units are south of the plains,[88] so it will be the mission of the Czechoslovakian and East German forces to concentrate their efforts south to hold NATO forces in that area plus advance towards the German-Dutch border and Ruhr; though their attack is the supporting attack, it may be necessary for them to use nuclear weapons to overcome the NATO force advantage of strength in that area.

Soviet, Polish, and a few East German formations comprise my main effort on the plains. Our forces are then weighted with the Soviet airborne divisions and the preponderance of helicopter assets to expedite forward movement. While southern forces are designed to engage and hold NATO forces, we avoid contact when possible enroute to the objectives. My northern forces are expected to advance 50 to 100 kilometers daily and reach the Antwerp-Brussels area on D+6. Northern forces will be prepared to move from the Antwerp-Brussels area into France or support the southern force seizure of the Ruhr. On order, both forces will be prepared to continue operations towards Paris.

Execution

On governmental orders only, force north will attack across the FRG-GDR border to capture or control these objectives: Hamburg; Bremen; Rotterdam-Europort; and Antwerp-

Brussels. Second echelon elements will capture or control: Kiel; Bremerhaven; and the Hague.

(See map at the end of this chapter for a graphic representation of my phase lines, distances covered from the start line (FRG-GDR border), and timing. These control measures and distances are within the execution limits of my WTO force).

Phase Line Alpha - E4 (north-south autobahn between Hamburg and Hannover), 30 kilometers from start line, D-Day.

Phase Line Bravo - Weser River, 90 kilometers, D+1.

Phase Line Charlie - Autobahn 29, state roads 51 and 69 (north-south from Wilhelmshaven to Osnabruck), 150 kilometers, D+2.

Phase Line Delta - State road 70 (north-south between Leer-Rheine), 210 kilometers, D+3.

Phase Line Echo - Rhine River, 290 kilometers, D+4.

Phase Line Foxtrot - Maas River, 310 kilometers, D+4.

Phase Line Golf - Albert Canal, 390 kilometers, D+5.

Phase Line Hotel - E10 (east-west from Liege to Dunkerque), 450 kilometers, D+6.

Following is a summary of my execution scenario from H-Hour on D-Day to the completion of the capture or control of the Benelux on D+6.

"H-Hour on D-Day the Elbe and Weser crossing sites of the autobahn system will be seized by a combination of airborne and helicopter forces: airborne forces will take the deeper objectives on the Weser. Led by our highly mobile reconnaissance elements in armored personnel carriers and supported by tanks and tactical air, the main force will cross the border and head via the best available roads to the crossing sites.

"By the end of D-Day, the lead elements will have crossed the Elbe and approached the Weser: if NATO counteractions are weak (as expected), the Weser will be crossed on D-Day with operations continuing at full-speed west, day and night.

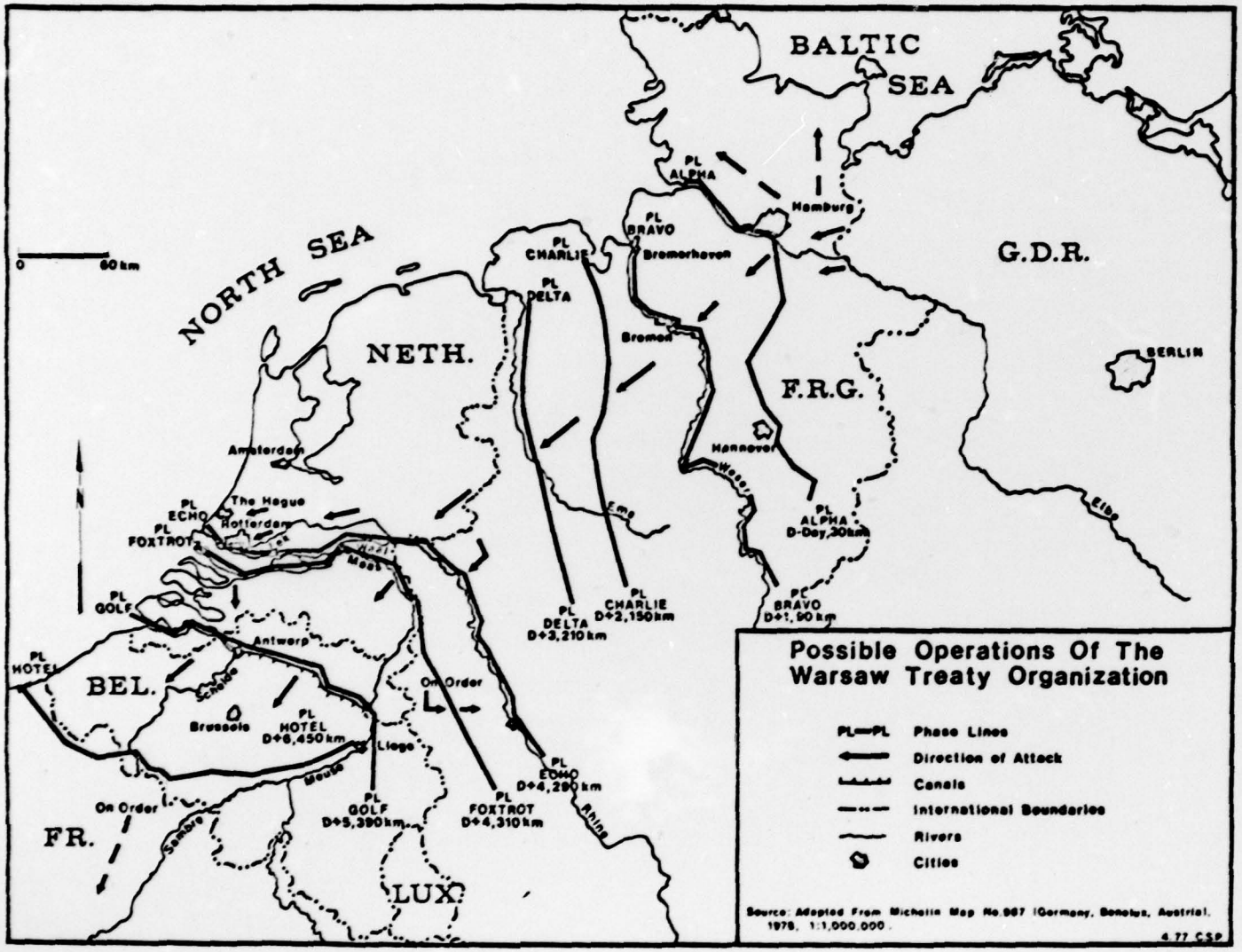
"On D+1 fresh armored units will be exploiting the penetration south of Hamburg and Bremen to press on for the north-south roads at Phase Line Charlie. To keep the advance going at top speed, units will continue to be moved forward to take over the lead while units previously in the lead will be refueled and rearmed. Follow up forces, either East German or Polish will control Hamburg, Bremen, and the lines of communications, plus move north to seize Lubeck and Kiel. Helicopter forces used on D-Day will be withdrawn from the bridgeheads and assembled for future crossing site security missions.

"On D+2 and D+3 the main east-west road, E72 will be the axis of advance for the armored forces. Cross-country

movement will take place only when required by enemy action or destroyed roads or bridges. Some flank security will be provided by reconnaissance forces, though exposed flanks do not concern me.

"No later than D+4 it should be anticipated that our northern attack is perceived by NATO as the most dangerous: in any case prepared demolitions should by this time have been placed on the bridges across the Rhine and Maas-Meuse. The value of those bridges in the Arnhem-Nijmegen area is worth my attempt of a Montgomery-style airborne operation to capture them. If it is successful, then the bridges will be used; however, I am planning to use our own military bridges on the Rhine-Maas between Nijmegen and Venlo. These crossing sites will be taken by the second use of the mass helicopter-lifted motorized infantry battalions.

"Near Henglo I will need to decide on whether to use commercial bridging across the Rhine (if it has been captured intact) or swing the force more to the south across the Rhine-Maas by an assault river crossing. By this time on D+4, the choices of better roads is opening up, requiring me to make more decisions as to which one(s) we will take to the objectives. The likely decision will be to have the majority of the force cross on military bridges south-east of Nijmegen, with enough of my force branching off to head for Rotterdam-the-Hague via the roads north of the river system. Once across the rivers separating Germany from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PL HOTEL D+6,450 km
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PL FOXTROT D+4,310 km
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Possible Operations Of The Warsaw Treaty Organization
PL—PL Phase Lines
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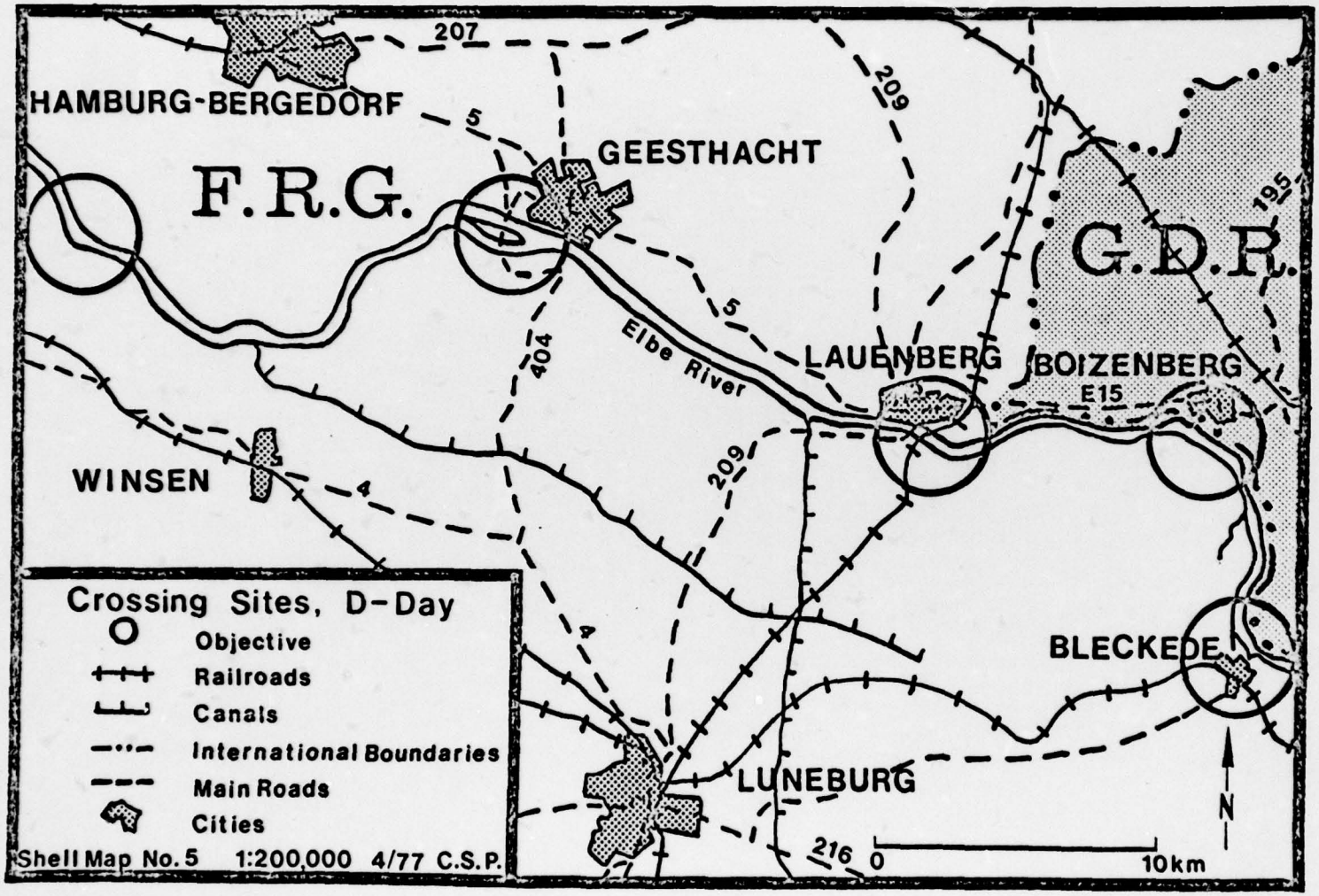
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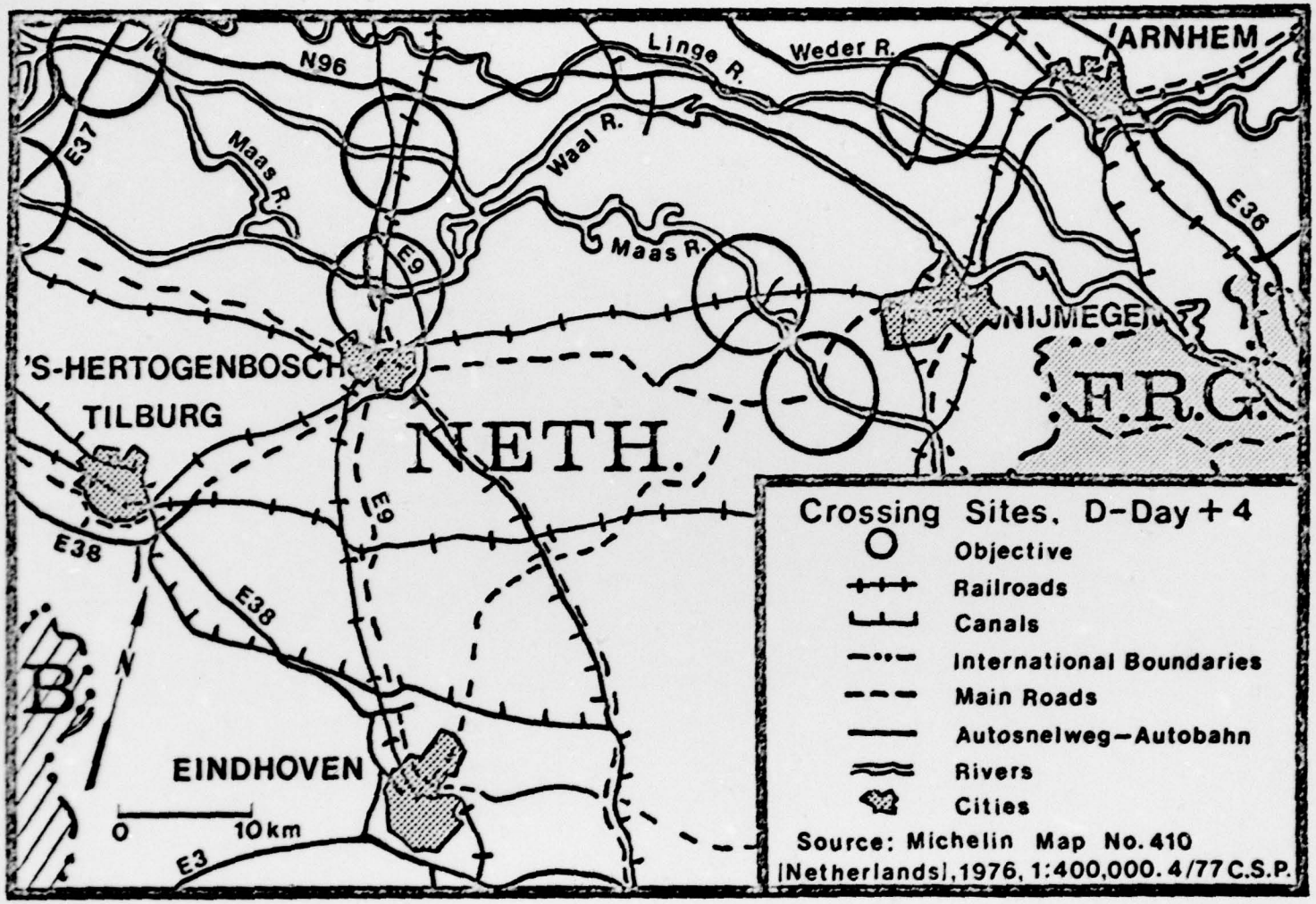
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Source: Michelin Map No. 410
[Netherlands], 1976, 1:400,000. 4/77 C.S.P.

Holland and Belgium, it becomes smoother sailing at top speeds via the dense autostrade routes.

"With the NATO forces left behind in Germany to fight with our southern force comrades, it should be an easy matter for us to take Rotterdam-Antwerp-Brussels; then wait for new government orders.

"In summary, the critical phase of our operation is the initial crossing of the Elbe and Weser rivers. Once past those barriers it becomes a matter of keeping the forces supplied with fuel until the Rhine and Maas are reached. Fresh with our thrill of victory, it would be difficult for enemy home guard and reserve units in Holland and Belgium to stop us."

Wrap Up

The scenario above is possible. If an attack takes place across the FRG-GDR border, it is my opinion that it will come with little warning and full force across the plains. Orders given to the WTO commander will be to get to his objective fast before NATO can organize new defensive lines or be reinforced by American-based units; the plains are the best option.

Commanders of WTO forces are well read in Soviet military history plus have access to the works of German, American, and British soldiers who previously used the area. They are aware of the former stumbling blocks in western

Europe, they had similar ones on the eastern portion of the plains, and have worked at structuring their forces to eliminate them.

Some of the major mobility problems of the past were corrected by the development of new tactical and administrative bridging; the capability of fixed wing aircraft to move larger numbers of parachutists to drop zones; helicopters that can lift the soldiers and equipment of a motorized rifle battalion, including carriers; and improved trafficability, speed, endurance, range, and firepower of their tanks, troop carriers, and artillery. The sophistication of WTO equipment is second to none and there is plenty of it.

The commander, who is to lead these formations into Germany and beyond, knows there is no guarantee of success; but he also knows his soldiers are well trained and equipped to move and shoot; they are ready to put their plans to the test of the plains.

CHAPTER VII

CONCLUSION

The four commanders of this study were certainly not the first to use the plains of northern Germany and the Benelux countries. Famous names as Napoleon and Bismark come immediately to mind of one who has studied western European history. Deeper research brings forth a list of other lesser known commanders who, for their country or themselves, used the plains to move their armies.

This study of 20th century commanders was done to show the progression from the traditional foot infantry approach to solution of the tactical problem, to the armored high-speed attacks in conjunction with air support. In 1914, General von Kluck was forced by the equipment then available to fight the battle to Brussels, then south to France as had German generals long before he ever saw a uniform. Three decades later, Generals von Bock, Bradley, and Montgomery were able to use the mobility of their forces to get the job done faster; that is, when the ground was dry enough to maneuver their vehicles. Four decades after those three commanders, technological advancements of tracked and wheeled vehicles have now made the plains an excellent area for maneuver.

The author must also admit that 20th century commanders were chosen because of the availability of written materials by, and of their exploits. United States and western European archives have more material than could probably be read in a lifetime. The Imperial War Museum archives in London alone have enough of the original maps of the Montgomery campaigns for a researcher to spend months going over the operational overlays and maps that were once posted on the walls of his caravan.

If history is repetitive, we can expect more conflicts to take place in Europe. At this time, the sides are joined with NATO in the west and in the east the WTO. Whether this balance continues is an open question. At this point in time, it is not NATO policy to initiate military action against the WTO forces. The assumption is then, if NATO does not begin operations against them, and conflict does erupt in Europe, it will have been initiated by the WTO. Common sense dictates that this WTO action would be fought with all available forces. The fastest way to the critical economic and political centers of western Europe is over the northern plains. In my opinion, with the amount of combat power the WTO forces can generate, it will not be a requirement to use nuclear weapons; which makes NATO first-use of nuclear weapons questionable.

It would be an interesting study to look at this same thesis on the eastern side of the FRG-GDR border. The

plains stretch eastward for over 1000 kilometers through the GDR, Poland, and well into Russia. The 20th Century history of that area is just as rich in examples of successful maneuver over that area. Perhaps some day the area will be open for observation by western military personnel; the exploits of the Hindenburg, Leeb, Model, and Zhukov armies can then be compared to the availability of invasion routes at that future date. We cannot rule out the possibility of operations east of the FRG-GDR border within our lifetime.

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